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High Inflation and The Cruzado Plan in Brazil

Carlos D. Winograd

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Carlos D. Winograd

Institute of Latin American Studies
31 Tavistock Square, London WC1H 9HA

Carlos Winograd is a Research Fellow at DELTA, Paris and an Honorary Research Fellow of the Institute of Latin American Studies.

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Introduction

Brazil, under President Fernando Henrique Cardoso, has made enormous progress in reducing inflation which in June 1994 was running at nearly fifty per cent per month. The *Plano Real*, named after the new currency introduced on 1 July 1994, had lowered inflation to a monthly rate of less than two per cent by the beginning of 1995. Brazil, however, has adopted many inflation stabilisation programmes in the last decade and all before 1994 failed spectacularly. This Research Paper is a detailed study of the most spectacular failure of them all – the Cruzado Plan.

In February 1986, the Brazilian government announced the launch of the Cruzado Plan, a stabilisation programme which aimed to tackle drastically a long history of chronic and high inflation. The main elements of this anti-inflation plan were the freezing of prices, wages and exchange rates, and monetary reform. Since 1984, programmes with similar stabilisation characteristics have been implemented in Argentina (in 1985), in Israel (in 1984 and 1985) and in Mexico (in 1987) .[1] These anti-inflation plans have been called 'heterodox' in contrast to orthodox stabilisation policies which are exclusively centred on fiscal and monetary austerity.

Heterodox shock programmes always have a huge initial success with a very perceptible fall in the rate of inflation without major employment costs. But, in the case of Argentina and Brazil, the situation progressively deteriorated and the experience finished with an inflationary explosion.

We will study in this paper the foundations of these stabilisation plans and Brazil's experience of the Cruzado Plan. The first part will present the analysis of the role of indexation mechanisms in an economy with very high inflation and the ineffectiveness of orthodox stabilisation when price inertia is the dominant element in the inflationary dynamic. We will afterwards see the relation between budget deficits and inflation, a privileged causality link in standard analyses of stabilisation policies. Finally, we will study the benefits and the limits of heterodox shock policies in obtaining lasting price stability. The second part will analyse the results of the Cruzado Plan and will show the errors both in its creation and in its implementation.

Part 1. Chronic Inflation, Indexation and Stabilisation

If it is claimed that inflation is purely a monetary phenomenon, the creation of effective anti-inflation policies does not require the rigorous analysis of the evolution of markets, of the structure of contracts or other changes of the working of the economy under different inflationary regimes. If inflation is the obvious result of 'too much money chasing too few goods', it is only necessary to control the money supply to eliminate this undesirable curse. According to a more recent version of this approach to the inflationary process, you only need announce a money supply growth rate which is credible and compatible with a lower rate of inflation for agents to adjust their expectations, resulting in a lower rate of inflation.

Once the 'true' cause of inflation is identified, the problem of determining the pertinent monetary aggregate will still need to be resolved. Moreover, the credibility of the announced policies necessitates a future budget deficit which is compatible with expected monetary policy (Sargent 1982, 1986). The link between monetary policy, budget deficits and inflation is therefore clearly established.

On the other hand, when it is admitted that inflation is a more complex phenomenon, which may be due to monetary factors but not to exclusively monetary factors, the investigation of the researcher is more uncertain.[2] A sensible monetary and fiscal policy is a necessary condition for maintaining stable prices, but is far from being a sufficient condition for successful disinflation. Examples of failures of anti-inflationary policies based only on fiscal and monetary austerity are legion.

Heterodox stabilisation policies highlight supply-side analysis, price determination by private firms, wage adjustment mechanisms, the adjustment rules of exchange rates and of prices in the public sector. The recent experiences of heterodox shock in Argentina, Brazil, Israel and Mexico show the usefulness, but also the limits, of the use of income policies to reduce inflation in economies with a long inflationary history behind them.

The foundations of heterodox stabilisation policies, and in particular the role of income policies, are analysed in this first part which contains seven sections: the first two deal with the phenomenon of price inertia and the impact of indexation mechanisms on inflationary dynamics and an evaluation of the effect of standard stabilisation policies in economies with chronic high inflation.

The third section studies the foundations of an anti-inflation programme through the announcement of a budget policy that is consistent with Sargent's theories and shows that the success of such a programme requires the coordination of individual actions, rarely a condition satisfied spontaneously in a market economy.

The fourth and fifth sections present the advantages and limits of a stabilisation plan centred on incomes policies. The fourth section studies the impact of monetary and fiscal policies at the time of a change in the inflationary regime and evaluates the relation between budget deficits and inflation as well as the role of expectations and their potential destabilising effect in the presence of a long inflationary history.

The fifth section presents an analysis of distributive compatibility problems, which arise from the unexpected freeze in prices and wages of private agents and then studies the mechanisms which permit the attainment of distributive neutrality under a heterodox shock. The sixth section presents and evaluates the recent controversies over inflation and stabilisation polices in Brazil. The seventh presents the conclusions of the first part of this paper.

Price Inertia

C. Bresciani-Turroni (1937), in his study of German hyper-inflation in the twenties, referred to Messedaglia, an Italian economist who introduced the concept of price inertia. Like other concepts in economics, this one experienced several rediscoveries. In all inflationary processes, in the North as well as the South, a part of price rises is due to price inertia.[3] Current inflation has an 'inherited' component from the past: today's inflation is partly determined by yesterday's inflation. This is even truer when implicit or explicit indexation mechanisms are introduced into the various contracts which govern economic life. Such indexation, in particular that of salary contracts, tends to become widespread in an environment of chronically high inflation. But why is this so?

In a situation of high and variable inflation, the variation of relative prices[4] increases and the distribution of income becomes more unstable. Also, the real value of assets and liabilities held by the public and private sector fluctuate greatly, which can result in large transfers of wealth. The economy therefore becomes permeated with an unstable climate and uncertainty over the future state of the system, thus affecting the sources of current decisions. The length of contracts tends to fall in order to minimise renegotiation costs in the case of new information becoming available.[5] However, permanent renegotiation cannot happen without supplementary costs; on the one hand, the cost of gathering the necessary information to take a decision, while on the other hand the probability of conflict between the concerned parties - and the expected costs - tends to increase with the frequency of negotiations.

Under these conditions, even in the absence of compulsory indexation imposed by law, private agents often resort to voluntary indexation on past inflation as a rational mechanism of cost minimisation. In the absence of 'news' - supply side shocks, demand side shocks, and public price shocks (notably in

exchange rates) – the best conjecture is to anticipate that future inflation will be the same as today's.

A stable inflation equilibrium based on inertia can thus be obtained. However, if indexation by past inflation is a simple rule minimising costs derived from chronic high inflation, the stability of the indexation regime faced with 'news' is fragile. The expectation or announcement of a price shock, particularly if it leads to an acceleration of inflation, will incite a renegotiation of the indexation rules. Typically, a fast acceleration in inflation will prompt calls for a reduction of the indexation period length, or *ad hoc* salary compensations.

In a regime of lagged wage indexation - on past inflation - for a given period, the real wage is a negative function of inflation. An inflationary acceleration will therefore induce a fall in the real wage.[6] An increase in wages greater than that which corresponds to inflation, or a reduction of the period between wage adjustments yields a real wage level which corresponds to a lower inflation level. In the case of a considerable disruption to the inflationary regime, certain agents would have an interest in demanding – or provoking – the breaking of the previous indexation rules. The frequent renegotiations and changes in the length of the periods of adjustment of wages during the development of German hyper-inflation is an illustration of this phenomenon.[7] In the case of firms, the expectation of an inflationary acceleration may induce the breaking of implicit rules of price adjustment according to past inflation. The anticipation of a future increase in production costs will be taken into account and firms will have a tendency to increase their profit margins on current prices (overpricing behaviour).[8]

It can therefore be observed that, in an economy where wage indexation is widespread and in which this fact is common knowledge, the best conjecture for future inflation - in the absence of 'news' or various shocks - is to anticipate an identical inflation rate to the current one and act consistently with such expectation in a very simple framework. From these observations the inflationary dynamics in a standard indexed economy can then be specified. With a $\hat{}$ referring to a variable's rate of change, the inflation rate $\hat{p}_t$ at time 't' can be written as:

$$\hat{p}_t = \alpha\hat{p}_t^{T} + \beta\hat{p}_t^{I} + \gamma\hat{p}_t^{P} + (1 - \alpha - \beta - \gamma)\,\hat{p}_t^{f} \tag{1}$$

where $\hat{p}_t^{T}$ is the inflation rate of tradeable goods abroad, $\hat{p}_t^{I}$ is the inflation rate of industrial goods where they are imperfect substitutes of foreign goods, $\hat{p}_t^{P}$ is the inflation rate of public sector prices (such as energy and public transport) and $\hat{p}_t^{f}$ is the price of goods which are not traded (flexible prices), such as certain

fresh foods or services. These different prices are determined by the following equations:

(2) $$\hat{p}_t^{T} = \hat{e}_t + \hat{p}_t^{*T}$$

(3) $$\hat{p}_t^{I} = a\,\hat{w}_t + b\,(\hat{e}_t + \hat{p}_t^{M}) + h\left[\frac{Q_t^{dT} - Q^{sT}}{Q_t^{sT}}\right]$$

(4) $$\hat{p}_t^{P} = \hat{p}_{t-1} + P$$

(5) $$\hat{p}_t^{f} = e\hat{p}_t^{f} + g\left[\frac{Q_t^{df} - Q_t^{sf}}{Q_t^{sf}}\right]$$

Price inflation of a tradable good is equal to the devaluation rate, $\hat{e}_t$, plus the inflation rate in the international market, $\hat{p}_t^{*T}$. The price of an industrial good (p_t^{I}) is a function of wage costs, w_t, and the cost of an imported intermediate good, $p_t^{M} = e_t\, p_t^{*M}$, with a and b being the respective parts of the total cost. Moreover, the price of the industrial good depends on a factor of excess demand where $Q_t^{d\,T}$ and Q_t^{sT} represent demand and supply respectively.[9] Regarding the prices of public goods, p_t^{P} , the government follows an indexation rule to maintain constant real prices and to avoid the excessive disequilibrium of public enterprise finances. The exogenous variable, P, allows the introduction of public price shocks . A policy of austerity is often characterised by increases of p_t^{P} above the inflation rate, i.e. $P > 0$, which is intended to increase public company revenues and reduce the government budget deficit. The inflation rate of a good which is not tradable or with flexible prices is specified according to a standard hypothesis: p_t^{f} is determined by the expected movement of the price, ep_t^{f} , and by its market's excess demand ($Q_t^{d\,f}$ and $Q_t^{s\,f}$ represent demand and supply respectively). The case of rational or adaptive expectations can equally be taken into account by this equation.

The adjustment rules of nominal wages and the nominal exchange rate are:

(6) $$\hat{w}_t = \Phi\hat{p}_{t-1} + W \qquad 0 \leq \Phi < 1$$

(7) $$\hat{e}_t = \hat{p}_{t-1} + E$$

The nominal wage, w_t, is indexed to the inflation of the preceding period. The parameter Φ represents the coefficient of indexation; in the case of imperfect indexation (partial) $0 \leq \Phi < 1$, and W introduces the possibility of a salary shock.[10] The exchange rate adjustment hypothesis assumes, in principle, a passive crawling peg rule which is intended to maintain a constant real exchange rate. However E takes account of exchange rate shocks. This would be the case, for example, of a maxi-devaluation with the aim of increasing the real exchange rate in response to an adverse external shock.

The specified structural equations represent an economy with five goods: a tradable good, T, an exportable good, I;[11] an imported intermediate good, M,[12] a public sector good, P, and a non-tradable good, f. From the equations (1)-(7), a reduced form of the rate of inflation is obtained. We note the constraints which are too often neglected by standard stabilisation policies. Under the assumption that $\hat{p}^{*T}_t = \hat{p}^{*M}_t = 0$, the following is obtained (assuming full indexation):

(8)

$$\hat{p}_t = (\alpha+\beta+\gamma)\,\hat{p}_{t-1} + h\beta\left[Q_t^{dT} - Q_t^{sT}\right] + (1-\alpha-\beta-\gamma)\,(e\hat{p}_t^{f} + Q_t^{df} - Q_t^{sf})$$

$$+ (\alpha+\beta b)\,E + \gamma P + \beta a W$$

In the absence of shocks and a stationary equilibrium, i.e. assuming

$$E = P = W = 0 = Q^{dT} - Q^{sT} = Q^{df} - Q^{sf}$$

we obtain

(9) $$\hat{p}_t = \hat{p}_{t-1}$$

Equation 9 describes a stationary inertial inflation equilibrium: actual inflation is determined by yesterday's inflation and the inertial component of inflation induces a stable inflation rate. The variability of inflation observed in countries with chronic inflation is due to various shocks and demand conditions. Large devaluations to adjust to the debt crisis are an obvious example.

Analysis of Equation 8 allows us to evaluate the impact of an anti-inflationary policy where the sole instrument is the reduction of aggregate demand. A fall in demand has a disinflationary effect, but the unemployment-inflation trade-off can be too unfavourable in an economy with a large inertial component. On the one hand it is limited in effect to the contraction of industrial sector profit margins, and the disinflationary impact on the flexible price sector, f; the part of the inflation rate associated with these effects tends to be very weak. On the other hand, if a large increase in the price of vegetables can produce a non-negligible acceleration of inflation in an economy with low inflation, a disinflation in the tomato market cannot be counted on to weaken inflation of 500% a year.

A similar reasoning applies to the disinflationary effect of a reduction of profit margins of industrial firms as a result of demand contraction. If the impact can be large enough to reduce an inflation of 5% a year, the situation changes when inflation reaches very high levels. A reduction of profit margins of 3-4 points can allow an inflation of 5% a year to be reduced by a third, but it is inconceivable to count on a reduction of profit margins noticeably to reduce an inflation rate of 500% when production costs increase at the rate of inertia, in this case 500%.[13] Where the inertial component is large and inflation is very high, a stabilisation policy based only on demand control runs the risk of being not only very deceptive, but above all may generate enormous adjustment costs.

The Fundamental 'Anchor' of the System

The previous analysis can be extended to other theories of inflation, based on a unique 'anchoring' of the price level. In opposition to the monetary measure, certain economists find the anchoring of inflation in wage dynamics or in exchange rate movements.

The problems derived from the anti-inflation policies inspired by these theories can, once again, be illustrated by a simple numerical example. A reduction of the indexation coefficient on past inflation, Φ, will allow the rate of wage inflation to fall, thus reducing inflation. A fall in Φ from 1 to 0.6 will cause a perceptible reduction in inflation when its initial level is low. And if, because of other factors, inflation remains unchanged, for example at 5%, the fall in real wages will only be 2%. On the other hand, in the case of a rate of inflation of 500%, an identical exercise would imply a reduction in real wages of 33.3% for a very weak eventual disinflationary benefit.

When the chosen anchor is the nominal exchange rate, an analogous calculation can be carried out, but the experience of the active crawling peg system in the southern cone of the Americas between 1978 and 1982 is the best example of the irrationality of such a policy.[14] A transitional disinflation is obtained at the cost of a large revaluation of the real exchange rate until the

massive corrective devaluations cause an acceleration of the inflation rate ($E > 0$ in Equation 8).

It can again be noticed that, in an economy with high inflation where inertia is the dominant component, the use of an isolated stabilising instrument (in this case the exchange rate or wages) will produce a very small and probably very temporary disinflation at the cost of large disequilibria which must eventually be corrected. Nevertheless the difference between a high inflation regime and a hyper-inflation regime must be stressed. It is often asserted that the fundamental anchor of the system is the exchange rate, using hyper-inflationary experiences as an inspiration. In fact, it has been observed that in a number of hyper-inflation cases a process of widespread 'dollarisation' of contracts occurs, eliminating the characteristic coordination problem of chronically high inflation regimes (Winograd, 1985a).

'A la Sargent' Stabilisation and Coordination Problems

The dissatisfaction with these various anchors as anti-inflationary instruments leads us to reconsider the effect of consistent fiscal announcements 'à la Sargent'. If inflation is a fiscal and monetary phenomenon and economic agents know this, a credible announcement which is compatible with stable prices will lead them to jump from a rational expectations *inflationary* equilibrium to a *stable prices* rational expectations equilibrium. And in the absence of unexpected shocks, the passage from an inflationary equilibrium to a stable price equilibrium occurs without any adjustment costs. A consistent and credible announcement would therefore constitute a sufficient condition to stabilise prices.

While such an exercise can be logically sustained in an economy with two agents, the government and a private agent, it is difficult to rationalise this stabilising miracle in a decentralised economy with a great number of agents.[15] What is the decision-making process which leads all the concerned agents to jump jointly to the right equilibrium? The importance of studying the specific behaviour of markets in an economy with chronically high inflation, its contract structure and the role of indexation rules can thus be seen.

The hypothesis of the effectiveness of a consistent fiscal announcement assumes that, if it is credible, agents will jump to the stable price equilibrium, this being in their interest since they would no longer have to suffer the inflation tax associated with the initial equilibrium. In our world of lagged indexation contracts, such behaviour would induce the various agents to renegotiate their contracts under a stable price hypothesis, without backward-looking clauses. It should result in contracts which are specified in nominal, non-indexed terms. But what is the incentive to renegotiate for non-indexed contracts when indexation dominates?

An indexed contract is better than a contract in nominal (stable price) terms, except in the case where salaried workers or creditors expect price deflation, which does not appear very probable in a quasi-hyperinflation environment. An indexed contract is equivalent to a nominal value contract when price stability materialises, but the first dominates the second in the case of persistent inflation. It is obvious that if all agents decided to go from an 'indexed inflationist world' to an 'un-indexed world of stable prices' in unison, then they would benefit from the disappearance of the inflation tax. But the essential characteristic of a market economy is the decentralisation of decisions and the difficulties of coordination of individual actions. If only a portion of agents renegotiate their contracts to exclude indexation clauses then they will be made worse off with persistent inflation. All agents are aware of this fact and, consequently, no one individual would voluntarily decide to renegotiate their contracts without indexation clauses.

The answer to this coordination problem leads us to take into account a voluntary agreement between management, employees, unions and government or a close substitute: price and wage controls. It is therefore possible to identify the main element of heterodox shock plans. If the mechanisms sustaining the stabilising efficiency of a consistent fiscal announcement are rather unclear, the specific measures coordinating individual actions would lead the economy to a better equilibrium.

Incomes Policy and Sustainable Stabilisation

The economic controversies over the fundamental (and unique) anchor of the system in high inflation economies resemble the debate on a simple exercise such as the anchoring of a ship in a port whilst the crew is caught in a storm. No serious captain, forced to anchor his ship in the middle of a storm, would wonder which anchor to use. He will just drop all the ship's available anchors to save the ship.

The preceding analysis gives us the foundations of price, wage and exchange rate control policies. An incomes policy allows the coordination of decisions of different agents and eliminates inflation inertia. But this policy implies a fixed vector of relative prices. And if the real exchange rate (or real wage) is 'fixed' at too low a level, a revision will eventually need to take place, endangering the stabilisation strategy. The type of problem associated with the use of a single anchor will reemerge. Price controls therefore need to be established with a sustainable vector of relative prices.

An incomes policy which coordinates individual actions is thus a necessary condition to lead the price equilibrium, but it is certainly not a sufficient condition to push the economy into a stable price equilibrium. Appropriate management policy becomes a fundamental instrument. A careful monetary and

fiscal policy should be undertaken once incomes policy eliminates inertial inflation. Faced with an over-expansionist monetary and fiscal policy which is incompatible with price stability, the initial success of large disinflation obtained through the use of controls can be temporary. When prices are controlled, the excess demand will lead to quantitative rationing in the markets with controlled prices and the adjustment of prices in markets without controlled prices (financial assets and markets with flexible prices). And when prices are stabilised, large variations in certain markets – 'the tomatoes' – again become a not inconsiderable source of inflation. Moreover, in an economy with a recent and long history of high inflation, the 'memory of inflation' is very persistent and a succession of bad signals can render the economic environment rapidly uncontrollable.

Monetary Policy and Stability

In a situation where an economy is shifted from a high inflation equilibrium to a stable price equilibrium, prudence in monetary and fiscal policy has more to do with skill than a rigorous econometric estimate. A contraction of the money supply is not synonymous with prudence. The movement from a high inflation regime to one of stable prices causes an increase in the real demand for money and a restrictive monetary policy risks producing an undesired contraction of production. Given the instability of money demand when a strong disinflation occurs, the subsequent monetary policy should not come from monetary aggregate targets alone.

Budget Policy and Stability

Standard macroeconomic analysis often attributes persistent inflation to budget deficits. While this can be a source of inflation, the analysis of recent chronic inflation experiences as well as hyper-inflations shows the opposite effect can dominate: i.e. inflation causing a budget deficit. The Graham-Olivera-Tanzi effect is the reason.[16] When facing delays in the payment of taxes, variations in the inflation rate cause variations in real tax collection. The extent of the fiscal lag will depend on the inflation level and the structure of the tax system. In the extreme case of Germany's inter-war hyperinflation, budget revenue only represented 1% of state spending in 1923 before the stabilisation of the mark in October, and then increased to 33% in December and 88% six months later.[17] C.Bresciani-Turroni (1937) estimates that new taxes did not exceed 8% of the total tax recovery in 1924. On the other hand, state spending did not show any appreciable variation after the success of the stabilisation. The increase in the real tax collection and the fall in the budget deficit were the result of the price stability and the elimination of the inflationary impact on real tax income.[18]

Paradoxically, attempts to reduce the budget deficit, which are supposed to reduce inflation, often have the opposite effect. Against the difficulty of reducing public spending, governments have recourse to the elimination of price subsidies on certain products and price increases in public industries. The fall in public company losses allows the reduction of the budget deficit at the cost of

an acceleration in inflation. A public price shock is represented by $P > 0$ in Equation 8. The mechanisms of indexation transmit the initial shock and perpetuate the inflationary effect.

When the fiscal lag effect is strong, a policy of budget austerity hingeing on public price increases can lead to the opposite result to that wanted: the increase of the budget deficit. On the one hand, the public price shock allows the reduction of public sector losses with the positive corrective result of a fall in state budget spending. But on the other hand, the inflation acceleration has a negative impact on public finances due to the fiscal lag effect. The composition of the budget is changed, but the net effect risks being the opposite of the objective set by policy makers (i.e. an increase in the budget deficit). In this case it is inflation which causes the budget deficit and not the opposite. This is typical of the 'surprising' impact of exchange rate devaluation shocks. The acceleration of inflation associated with a larger budget deficit seems to support the stance of orthodox economists, but the link is not the one they envisage.

It is therefore observed that, for a given price vector, a large disinflation can result in a real increase in tax revenues and a reduction in the budget deficit. Disinflation will also positively affect the real monetary wealth of the private sector: the inflation tax falls. A recomposition of state finances happens as a result of the instantaneous stabilisation of prices. Explicit taxes are substituted for the inflation tax. The net effect on aggregate demand is uncertain, particularly as those agents who suffer the inflation tax are not necessarily those who pay explicit taxes. The former are mainly workers with low incomes while the latter tend to be private companies and households with higher incomes, depending on the structure of the tax system.

The budget deficit is also linked to inflation through the effect of interest payments on the public debt (both home and abroad) due to inflation. This is a simple mechanism, but one which has been at the centre of important controversies between the officials of the IMF and the monetary authorities in Brazil. The servicing of internal debt has both a nominal debt adjustment component and a real interest rate component. For a given real interest rate, an increase in the inflation rate implies a higher nominal interest rate leading to a higher budget deficit. The nominal part of the interest payments compensates for the reduction, through inflation, of the real debt.

When inflation is low, this effect can be disregarded. Suppose, for example, that the inflation rate is 3% and the nominal interest rate 7%, which implies a real interest rate of 4%. With a ratio of public debt/GDP of 0.3, the inflationary part of servicing the debt represents 0.9% of the GDP. In the case of a high inflation economy, this effect becomes much larger. Assume now that the inflation rate is 100%, the real interest rate still being 4%; the nominal part of the debt interest now becomes 30% of GDP. In fact, for a given level of real public debt, the real servicing (4% a year) is identical, whether the regime is

one of high or low inflation. But in the second case the nominal part of the interest must compensate for a higher inflation rate.

Two budget deficit concepts are therefore used: the current deficit and the deficit adjusted for inflation.[19] The first incorporates total interest rates (real and nominal) and consequently overestimates the growth of the real public debt, the second only counts the real interest of public debt.[20] So, as a result of price stabilisation (leaving the real interest rate unchanged), the current inflation rate will fall, whereas the deficit adjusted for inflation will remain unchanged.[21]

Expectations and Stability

Fiscal and monetary policy prudence should take into account the various considerations listed above, but this policy will be greatly affected by the expectations of private agents. At the time of a heterodox shock, if prices have been stabilised, the economy will still not have forgotten its long history of chronic high inflation and relative price instability. It would be a mistake to believe that the stabilisation shock will instantly transform the system by replicating an economy with a long history of stable prices. The memory of inflation will always remain bright and bad signals will lead to a rapid destabilisation. In particular, we should note that financial markets are dominated by very short term positions. A sudden change in the expected returns of an asset will always lead to a quick and massive reallocation of private sector portfolios.

A monetary and fiscal policy which is in principle consistent with stable prices can be judged to be inconsistent by the private sector. This specific perception of economic reality by agents conditions their decision-making processes. If the incomes policy imposes fixed prices, private agents make decisions on production, consumption and the allocation of their portfolios. The fiscal and monetary programme will be incorporated into the decision making processes of the private sector – firms and households. When the beliefs of agents lead them to estimate that the fiscal and monetary policy appears incompatible with the incomes policy, their actions will reflect such beliefs. In certain cases the authorities will not be able to avoid acting to suit the beliefs of the private sector, no matter how ill-judged they seem.

Suppose, for example, that the government announces a fiscal and monetary policy which is consistent with price stabilisation, particularly taking into account the expected increase in the quantity of real money and the effect of fiscal lags. Nevertheless it is deemed too expansionist by the private sector and therefore perceived as incompatible with stable prices. Stabilisation by the use of controls will therefore be considered as transitory and will result in an expectation of a future acceleration of inflation. Current prices of goods will therefore be lower than expected prices, provoking an increase in consumption demand and an accumulation of stocks by firms. This inter-temporal substitution effect in the goods market can lead to quantitative rationing and the consequent

appearance of black markets, reinforcing the (corrective) price expectation adjustment.

Concerning financial markets, the expectation of a price increase will induce a fall in the expected real interest rates compared to the current real interest rate. The demand for credit will increase, in the anticipation of the future inflationary erosion of acquired liabilities. If the demand for goods increases there will also be a reallocation of financial asset portfolios. The demand for non-indexed assets falls and the demand for foreign or dollar linked assets will increase.

When the availability of foreign exchange is a constraint on the economy, an inflationary push will eventually be followed by a correction in the exchange rate. Without exchange rate controls, the public will expect an increase in the demand for foreign exchange and losses in the Central Bank foreign exchange reserves. Eventually, the monetary authorities will be forced to devalue in order to stabilise the foreign exchange market. Under a regime of exchange rate controls, the increase in the demand for foreign currency will produce an increase in the foreign exchange price on the parallel (free) market. The differential between the official exchange rate and the free exchange rate will thus rise, causing under-invoicing (over-invoicing) of exports (imports). The current account balance will deteriorate and a devaluation of the official exchange rate will be required to avoid (or redress) a balance of payments crisis.

The quantitative rationing of the goods market, as well as deteriorations in the current account, is the result of private sector convictions that led it to anticipate a temporary price stabilisation and not a permanent change in the inflationary environment. A fairly current theory, and one that is not necessarily strange, supports these beliefs: you only need to believe in the stability of the real demand for money and to ignore the existence of the Graham-Olivera-Tanzi effect. Alternatively the incorrect perception that certain prices have been fixed at too low a level can also play a destabilising role. An expectation of an inflationary revision of prices will set off speculative behaviour in the goods and financial assets markets. These beliefs can thus become self-fulfilling prophecies.[22]

Facing these destabilising expectations, the government has little room for manoeuvre. It either maintains the announced fiscal and monetary programme and the persistence of disequilibria of the various markets will cause corrective adjustments of prices and the exchange rate, or the government tries to 'discipline expectations' by toughening monetary policy. In the first case demand pressures will be eliminated, but the economic authorities will have validated the expectations of the private sector and the stabilisation will effectively be temporary. The ('false') beliefs will have therefore played the role of a self-fulfilling prophecy. In the second case, the government will adjust the monetary policy and an increase in expected nominal (and real) interest rates

will be necessary to force private agents to liquidate their speculative stocks of goods and financial assets. The increase in the interest rate can cause a serious problem for the expected future budget deficit, if there is a large public debt quoted in domestic currency. It will therefore be necessary to convince the private sector that there has been a change of regime and that stabilisation is not temporary.

Contracts, Unexpected Synchronisation and Stabilisation

In an economy with widespread indexation, the various indexed contracts (wages, rents) will not necessarily be synchronised. When, for example, the contracts are indexed twice a year, every month a fraction of their worth undergoes a readjustment of its nominal value: readjustments are therefore de-synchronised.

The desynchronisation of contracts causes a distributive compatibility problem with a policy of price fixing: the abrupt elimination of inflation would imply that workers, with an identical real average wage (over the whole of the indexation period[23]), will see their real wages fixed at different levels because their contracts were not simultaneously readjusted. Assume that two workers have the same average real wage, but one of them had a nominal readjustment of his wage one month before stabilisation whereas the wage readjustment of the second happened five months before. The real wage, following the stabilisation shock of the first, will therefore be higher than that of the other one. A similar reasoning can be applied to rents.

Various solutions might be envisaged, and we will look at three: (i) the announcement of a future price freeze, which will provoke a voluntary restructuring of contracts; (ii) an administrative resynchronisation of contracts in the period before the stabilisation shock; (iii) a conversion rule applied by the government simultaneously with the price freeze.

In the first case, the resynchronisation could happen at the cost of an inflationary explosion. The announcement of a future price freeze will set off defensive behaviour on the part of the private sector who will want to achieve D-day with sustainable real prices (real incomes). This protective reaction, rational from an individual's point of view, is not so from the collective point of view as it can lead to hyper-inflation before the shock.

The second type of solution will have recourse to a reduction of the indexation period to one month. The readjustment of different classes (according to the months which would set off the readjustment) or workers will therefore be synchronised, but at the cost of inflation acceleration. To avoid the inflationary impact and to maintain the real average wage, the indexation regime must be modified to introduce a partial readjustment of the nominal wage based

on past inflation. However, such a measure will, without a doubt, meet with strong resistance from workers.

The government could equally maintain the indexation period unchanged (for example six months), but wipe out the monthly readjustment of accumulated inflation.[24] If accumulated inflation during the indexation period (6 months) is 50%, the nominal wages of the concerned class will be readjusted by 6.99% in the six months following. The wage readjustments of all classes of workers will eventually be synchronised and, with a constant inflation rate, the monthly readjustments will avoid the inflationary impact of a reduction of the indexation period. However, this will not lead to distributive neutrality in the case of an inflationary acceleration – for example provoked by a supply-side shock - during the transition period.

If the resynchronisation of readjustments is perceived to be a preparatory measure to freezing prices, the defensive behaviour associated with the announcement of a freeze will again reappear. Inflation could therefore increase in the period before the shock.

The third solution to the desynchronisation of contracts is the administrative conversion of contracts at the time of the price freeze. This measure allows for the distributive neutrality of the price freeze. A monetary reform will allow the conversion of contracts in 'old money' into contracts in 'new money'. The scheme for the conversion of contracts, required to obtain a neutral price freeze, should fix a real value of wages (rents) in new money identical to the average real wage – for the indexation period – in old money.

The conversion of contracts done simultaneously with a price freeze will improve the effect of the 'surprise' stabilisation shock and therefore help avoid destabilising behaviour in the period preceding the stabilisation. It must be noted that the desynchronisation of contracts tends to disappear with the acceleration of inflation. An increased rate of inflation leads to a reduction in the indexation periods. Eventually the indexation becomes monthly – wages are readjusted by the previous month's inflation rate – and the readjustments are, as a result synchronised. The problem of desynchronisation of contracts and its distributive impact as a result of a stabilisation shock becomes non-existent. This was the case of the Argentine economy before the Austral Plan, where the readjustments of wages and rents were done on a monthly basis. It can be stated that, paradoxically, in a chronic inflation regime, the stabilisation can be simplified when inflation is higher.[25]

The price freeze raises a second distributive problem, linked this time to financial contracts. In an inflationary environment, the nominal interest rate includes the expected interest rate. When a stabilising shock happens, the nominal interest rate becomes the real interest rate. When inflation is very high, an unexpected stabilisation of prices can produce an enormous transfer of wealth

between debtors and creditors. This phenomenon is known as the Fisher effect. With a monthly inflation of 25% and a nominal interest rate of 26%, a credit contract of 3 months will have a real expected interest rate of 3%. An unexpected freeze in prices, eliminating inflation one day after the negotiation of credit, would imply a real effective interest rate for three months of 100%, identical to the nominal interest rate, whereas the real expected interest rate was only 3%.

The enormous transfer effect between debtors and creditors as a result of this phenomenon would not only imply the non-distributive neutrality of the stabilisation policy, but also could lead to the insolvency of numerous debtors and, consequently, to a severe financial crisis. The size of the transfer effect will depend on the type of dominant financial contract. The transfer effect will be even more important where the part played by credits (or debts) with prefixed nominal interest rates is large. In the case of indexed financial operations - the nominal interest rate is fixed after inflation is known - this effect will be irrelevant.

To avoid this transfer problem, the government should define a conversion rule for contracts simultaneously with price stabilisation. The aim of such a conversion would be to deflate contracts at a nominal prefixed interest rate to eliminate the inflation component. A financial reform would also allow the realisation of this operation: the financial contracts (at prefixed nominal interest rates) in old money depreciate over time in terms of the new money. The (predetermined) depreciation rate should be a proxy for the expected inflation incorporated in old money contracts.

Brazilian Controversies over Inflation and Stabilisation

In the 1970s and 1980s, two controversies on inflation and stabilisation policy attracted the attention of many Brazilian economists. The first can be summarised by the estimate of the Phillips curve for Brazil and by evaluating the adjustment costs associated with an orthodox stabilisation policy of fiscal and monetary austerity. The second centres on the alternative stabilisation policies to standard demand control strategies.

The empirical evidence revealed by the controversy over the Phillips curve in Brazil (A.C. Lembruger, 1974; C. Contador, 1977, 1982; A. Lara Resende and F. Lopes, 1981, 1982; F. Lopes, 1982; E. Modiano, 1983, 1985a and J. G. Almeida Reis, 1985) shows that the impact of demand variations on the movements of wages and prices is very small. The adjustment costs associated with an anti-inflationary policy of demand control are thus very high. The inertial factor, i.e. the inflation rate of the preceding period, appears to be an essential element in explaining price and wage dynamics. These studies explaining the failure of the orthodox stabilisation policies undertaken in Brazil

between 1981 and 1984 reinforced the 'inertialist' approach to inflation. During this period, the economic recession and the rise in unemployment did not produce an appreciable fall in the inflation rate. The thoughts of macroeconomists were therefore aimed towards alternative stabilisation policies, aiming to attack inertial inflation.

The second controversy was thus born from the failure of orthodox stabilisation policies and of a diagnosis which identified price inertia as the fundamental cause of inflationary persistence in economies with chronic high inflation. In 1984, F. Lopes (1984a) presented his proposition of a 'heterodox shock' to face inertial inflation. Two years later, this would inspire the Cruzado Plan.[26] Summarising his main assertion, Lopes stated that 'If inertial inflation tends to perpetuate itself and resists monetary and budgetary controls, what can be done to eliminate it ? In our opinion, the only effective solution is "heterodox shock". Contrary to orthodox shock which centres on monetary and fiscal contraction with a liberalisation of the price system, heterodox shock is characterised by a total freeze in prices coupled with monetary and fiscal liberalisation.' Concerning fiscal and monetary policy, the main objective should be to reduce the real interest rate and to stimulate public and private investment to restart the growth process. The production expansion should allow firms to withstand the initial price freeze and the controls which would follow.[27]

The main idea was the total deindexation of the economy by the use of a price freeze, with a passive fiscal and monetary policy or even an expansionary policy. Although the need for a monetary expansion at the time of price stabilisation had been shown, Lopes failed to note the importance of a demand policy that was consistent with price stability and ignored the role of private sector expectations and their potential destabilising effect.The identification of the inertial component as a determining factor of the inflationary dynamic leads to a price freeze and a very large (and fast) disinflation, but the proposed monetary and fiscal policy is not consistent with a stable price regime.

This ambiguity rests in part upon the fact that certain economists link the memory of inflation to the indexation mechanisms which transfer past inflation to the present. The deindexation should therefore eliminate the 'memory of inflation',[28] but this is not the case. The memory of inflation takes into account the long history of chronic inflation and is incorporated into the process of expectations formation: a 'bad' signal (actual or believed) activates the defensive mechanisms which characterise the behaviour of agents in a chronic high inflation regime.

In this first formulation of heterodox shock, the wage policy envisages the payment of a bonus to workers whose real wage was fixed at too low a level. But other workers will have their real wages fixed at too high a level, higher than the average real wage of the indexation period; this will be the case, for example, where a worker's wage was adjusted one month before the shock. A large

distortion of the wage structure could therefore result, with the risk of creating pressure for inflationary revision of wages. In any case, the first proposition of heterodox shock did not foresee any measures to adjust lease and credit contracts (at prefixed rates) embodying an inflation expectation which did not materialise. The effect of this transfer between creditors and debtors, provoked by the 'surprise' stabilisation of prices, therefore remained without solution.

In the second version of the heterodox shock, Lopes (1984b) adds to the main measures - the freezing of prices and a programme of monetary and fiscal policy - a monetary reform which solves the contracts' desynchronisation problem and the effects of the transfer of income and wealth. Neutrality from the distributive point of view is therefore strengthened. The monetary reform introduces a new monetary unit, the 'cruzado', which should replace the cruzeiro. The conversion from contracts quoted in cruzeiros into contracts quoted in cruzados is expected to correct the redistributive impact of the price freeze. The specific conversion rules were later developed by Modiano (1985b).

During 1984, a month after the proposed heterodox shock by Lopes, Lara Resende (1984) suggested the introduction of an 'indexed money' to remove inertial inflation. The basis of this plan was developed afterwards by Arida and Lara Resende (1984). The new money which they proposed would therefore be indexed, with the exchange rate in cruzeiros determined by the variations of the already existing indexed public securities, the ORTN (Readjustable Obligations of the National Treasury). The new currency would have a fixed parity with the ORTN and its value in terms of cruzeiros would be fixed every day. The other essential characteristics of the monetary reform proposed by Arida and Lara Resende are given below.

Financial Assets and Liabilities

The indexed money (IM) and the cruzeiro, in this scheme, will circulate simultaneously and there will be a free exchange between the two currencies. The free convertibility is necessary to avoid the repudiation of the old money, which will lead to a hyper-inflationary explosion in cruzeiros. Credit contracts can be renegotiated in IM or stay under their original form in cruzeiros. This measure is neutral when it consists of indexed credit (nominal postfixed interest rate), but is important when it consists of credits at nominal prefixed interest rates. The government will do all its financial transactions in IM hoping thereby to induce a strong preference for the new currency. Deposits on current accounts (deposit, savings, etc) will equally be instantly convertible into IM. Deposits on current accounts will thus escape the cruzeiro inflation tax.

Prices

The prices determined by the government (or by public firms) will instantly be converted into IM. Specific conversion rules will be used: the price in IM will be equalised with the indexation period's real average price (in ORTN). The private sector will have the option of fixing prices in IM or in cruzeiros.

The exchange rate
The nominal cruzeiro exchange rate will follow the passive crawl rule: mini-devaluations will compensate for cruzeiro inflation. The nominal exchange rate in IM will therefore be fixed, as well as the real exchange rate (excluding international inflation) that prevailed before the monetary reform.

Wages and other indexed contracts (rents)
Wages in cruzeiros will continue to be indexed, according to law, every six months. The conversion of salaries into IM will be voluntary, but following a predetermined rule: the value in IM should be equivalent to the average real wage level in cruzeiros of the preceding six months. The same conversion rule will be applied to leases and other indexed contracts. During the transitionary period of monetary reform, the IM and the cruzeiro will circulate simultaneously. But for every level of inflation, the IM inflation tax will be less than that in cruzeiros. Therefore, there will be a definite reason to use the IM as a means of exchange. To strengthen the substitution of IMs for cruzeiros after the transitionary period, the government will no longer publish cruzeiro price indexes and will fix a constant rate of exchange to the IM. An explicit incentive for conversion into IM of contracts in cruzeiros will result if the conversion rate is fixed above that of past inflation.

Arida and Lara Resende agreed with Lopes on the diagnosis of inflation inertia, but they add that the advantage of the IM programme over that of heterodox shock is that the changing of the inflationary regime is voluntary and does not rely on administrative controls which risk producing large distortions.[29] Moreover, they consider that the difficulties of a practical execution of price controls and salaries are insurmountable.

The IM programme, undoubtedly extremely ingenious, is not without problems. Modiano and Carneiro (1984) noted that the stability of the new money is not guaranteed: if inflation of cruzeiros accelerates during the transitionary period, the IM will suffer inflation and a loss of credibility could ensue. Moreover the acceleration of inflation in cruzeiros, by the phenomenon of inflationary contamination, could induce the indexation of contracts in IM.[30]

It must be noted that the neutrality and the voluntary nature of the IM programme are not obvious. If the conversion of contracts is, in principle, voluntary, Arida and Lara Resende defined the specific rules which must be followed: the conversion by the real average value of the six preceding months of public prices, wages and rent contracts. These conversion rules are necessary to guarantee distributive compatibility of the system. There is no particular reason assuring that private agents will voluntarily adapt to these rules. If this is not the case, there is a risk of resurgence of IM inflation: for example, when there is widespread conversion to a real value higher than that of the average.

To avoid this problem the government should administratively fix the

conversion mechanisms of private contracts.[31] Contrary to the belief of the authors, the voluntary nature of the IM programme is not necessarily an advantage. For if the conversion of contracts remains voluntary, it would be prudent that the conversion mechanism be predetermined by the government. In this case, however, the main critique of the heterodox shock programme would apply equally well to a consistent IM programme.

Conclusions

In this first part the foundations of the heterodox shock approach have been discussed. The analysis shows that under chronic high inflation, it is not realistic to count exclusively upon a reduction of the budget deficit to obtain an appreciable reduction in the inflation rate. If the adjustment costs derived from the orthodox stabilisation policies, in terms of unemployment, are very great when inflation is weak, they may become insupportable in a regime of high inflation, where indexation mechanisms based on past inflation are widespread.[32] In certain cases, a policy of fiscal austerity may lead to an acceleration of inflation and, paradoxically, through the fiscal lag effect induce a perverse increase in the budget deficit.

It can also be observed that in a market economy with a large number of agents, an announcement of a prudent budget policy ('à la Sargent') is not a sufficient signal to incite all the concerned agents to deindex their contracts. The elimination of the inflationary inertia problem requires a coordinated action on the part of private and public sector agents. Without voluntary co-ordination, a 'policy of co-ordination' imposed by the government becomes a public good. This need for co-ordination leads to the heterodox shock approach.

The absence of co-ordination also explains the failure of stabilisation policies where the only instrument is the control of a unique nominal anchor, such as the exchange rate, wages, or public prices. The exception that should be noted concerns the case of widespread 'dollarisation' of wages and price (as well as other contract) decisions, that are observed in extreme cases of certain hyperinflations (Winograd, 1985a).

An incomes policy allows the co-ordination of individual actions and the elimination of inertial inflation. The distributive neutrality of a heterodox shock programme can be achieved by a monetary reform introducing a new currency and the conversion of contracts linked to the past (backward-looking) to their real average value, whereas the contracts linked to the future (forward-looking) are deflated by a proxy of expected inflation. It is also observed that the conversion rules are less complex when they are synchronised.

The shift from a regime of high inflation to a regime of stable prices will lead to an increase in the real demand for money which should be taken into

account by the monetary authorities. The stabilisation of prices should also produce an increase in the real recovery of taxes, thanks to the Graham-Olivera-Tanzi effect. In this case, it is a fall in the inflation rate which produces a fall in the budget deficit, and not the opposite.

In an environment of chronic high inflation, an incomes policy appears to be an interesting tool to drive the economy to a stable price equilibrium. But the stabilisation risks being temporary since it lacks consistent monetary and fiscal policies. These should take into account, in particular, the potentially destabilising expectations of the private sector. The Cruzado Plan, studied in the next section, is a good example of temporary heterodox stabilisation.

Part II The Cruzado Plan: Experiences and Lessons

In this part, we present an analysis of the Cruzado Plan, the heterodox shock programme implemented in Brazil in February 1986. After a remarkable initial success with a fall of yearly inflation from 300% to 15%, this stabilisation experiment ended in an inflationary explosion at the beginning of 1987. The failure of this heterodox shock programme was largely due to conceptual errors as well as the phenomenon of policy 'paralysis' of the decision makers who refused for too long to allow any readjustment of the announced plan.

The constraints which are imposed on an economy with a fixed price regime, as well as the fragility of newly acquired stability, were ignored: a non-negligible set of prices was initially frozen at too low a level; coupled with over-expansionary monetary and fiscal policy and large increases in real wages, this led to widespread excess demand in the economy. Finally, the government renounced its plans to reduce inflation and Brazil found itself with a higher rate of inflation than before the Plan.

This second part of our study is divided into four sections: the first analyses the initial conditions which characterised the Brazilian economy when the Cruzado Plan was announced. The second section presents the fundamental measures of this plan, then the third section discusses its results. The last section describes the lessons that can be drawn from this heterodox stabilisation programme. All tables have been placed in the Statistical Appendix.

The Initial Conditions

The Cruzado Plan was announced on the 28th February 1986, and that month's inflation was 12.7%, (319.8% in yearly figures). Brazil had had a long history of chronic high inflation, but the economy had undergone an important change of inflationary regime in 1979, when inflation jumped from 40% to 100%.[33] This acceleration in inflation was the result of the second oil shock and the

adjustment policy pursued by the government: a maxi-corrective devaluation of the exchange rate to improve external balance. Moreover, the authorities had modified the wage indexation rule to allow a fall of the indexation period from one year to six months, strengthening the rise in the inflation rate.

Between 1980 and 1982, inflation remained stable at 100%. The balance of trade showed a net improvement during this period, but the increase of the international interest rate led to the deterioration of the current account. In 1983, a new maxi-devaluation, coupled with an austere monetary and fiscal policy, was implemented to tackle the foreign trade imbalance and reduce inflation. This policy caused a large contraction of economic activity and a decrease in the current account deficit. But, contrary to the expectations of the economic authorities, inflation accelerated from 100% to 200% and stayed fairly stable until the first half of 1985.

Between 1979 and 1984, inflation thus increased from 40% to 200% despite the orthodox stabilisation policies followed by the government. A persistent economic recession did not result in a fall in the rate of inflation. The fiscal adjustment brought about a reduction in the adjusted budget deficit, but the acceleration of inflation caused a large increase in the nominal budget deficit (Table 1) due to the increase in the nominal interest rate on internal public debt.[34] The adjustment policies undertaken from 1981 managed to stabilise the external accounts at the cost of a fast acceleration of inflation: the current account balance, which had been recording average deficits of $13.5 billion in 1980 - 1982, went into equilibrium in 1984 (Table 1). But the large external transfer required by debt service payments resulted in a strong contraction in investment[35] that, in turn, jeopardised the possibilities of sustained growth.

The failure of orthodox stabilisation policies, with regard to inflation, reinforced the theoretical and empirical arguments of economists who maintained that price inertia was the fundamental element of inflationary dynamics in Brazil. Disinflation, it was claimed, should therefore rely on a heterodox shock or the introduction of an indexed currency, but under no circumstances only on fiscal and monetary adjustment.

In March 1985, a civilian administration took power after 21 years of military rule. The Finance Minister, F. Dornelles, announced a stabilisation policy based, once again, on the reduction of the budget deficit. But the government decided simultaneously to introduce a price freeze. It was nonetheless a very inconsistent incomes policy: the Central Bank had to announce the monthly devaluation rate at the beginning of each month and the rule of lagged wage indexation (on past inflation) remained in force. Only the price of steel and fuel, effectively controlled by the government, remained fixed, whereas the prices of the private sector did not follow the economic authorities' expectations. In April, despite the announcement of a price freeze, the exchange rate fell by 13.4%.

This policy suffered from several errors of 'design' which were analysed in Part I. The price stability of fuel and steel had a beneficial impact on prices (essentially through production costs), but the exchange rate devaluations and wage indexation reflected past inflation. The inflation rate fell from 10.9% in the first quarter of 1985 to 7.9% in the second quarter, but the real prices of steel and fuel showed important reductions, and the financial situation of public companies deteriorated. In fact, the government tried to anchor inflation to the movements of public prices, a policy that produced hardly sustainable imbalances.

In June, against the pressures exerted for a readjustment of the underadjusted prices, the government progressively liberalised the price control policy. But in August the situation became much more complicated: a large increase in agricultural prices (22.6%), due to long drought, caused a fast acceleration of inflation and the Finance Minister, Dornelles, was replaced by D. Funaro. The government adopted a more expansionary monetary policy and the nominal interest rate remained stable despite the acceleration of inflation. Some ministerial advisers were worried about the impact of financial costs on the inflationary dynamic: in their view the nominal interest rate should be inflation's fundamental anchor.

In any case, the arrival in power of a civilian government also led to strong wage pressures. There were widespread demands for the reduction of the indexation period from six to three months. Towards the end of 1985, inflation was 15% per month and the political support from which the government benefited crumbled away. The acceleration of inflation led to even stronger pressures for the reduction of wage indexation periods, and the introduction of an endogenous time indexation wage rule linked to a trigger point inflation rate of 30% was discussed. The destabilising impact of these measures increased the fear of a hyper-inflationary explosion. In February 1986, the government responded to the political and economic crisis with the announcement of the Cruzado Plan.

When the Cruzado Plan was announced, the conditions for the introduction of heterodox shock were relatively good[36]: the economy had expanded since 1984, the real exchange rate was at a reasonably high level and real wages, after a good recovery in 1985, were at the average level of the five previous years (Table 1). The adjusted budget deficit was small and the state of the external accounts was particularly favourable. The current account of the balance of payments was in equilibrium, which allowed the country to service the foreign debt without resorting to increasing indebtedness. The international scenario was equally favourable with the low price of oil, of which Brazil is a large importer, and the devaluation of the dollar against European currencies and the yen.[37]

However, the initial conditions were less favourable concerning certain key domestic prices, which were too low as a result of the price control policy

followed in 1985. This was case, for example, for the price of cars, steel and fuel. Therefore, there was an element of repressed inflation. Moreover, many large state companies, operating in the steel and fuel sectors, saw their financial situation deteriorate with the consequent negative effect on the public sector finances.

The Cruzado Plan

The most important measures of the stabilisation programme launched on the 28th February 1986 are the following:

Monetary reform. The government introduced the cruzado, a new currency which replaced the cruzeiro, with an exchange rate of 1,000 cruzeiros to one cruzado. This monetary reform, coupled with specific rules for contracts with unsynchronised readjustment (wages, rents) and for financial contracts at prefixed interest rates, was implemented to avoid the redistributive effects of heterodox shock. The intention of the authors was thus to launch a shock programme that assured distributive neutrality.

Prices. All prices, except industrial electricity which increased 20%, were frozen for an indefinite length of time at their level of 27 February. The government also introduced a change of methodology for the creation of the consumer price index: the base date of the index was moved to 28 February to avoid 'statistical inflation' during the plan's first month. If the price index had continued to be calculated from weekly averages, there would have been inflation in March even though prices had remained fixed since 27 February. This inflation residual could be large in a high inflation regime, which would negatively affect the stabilisation plan's credibility and would have eventually led to calls for the adjustment of prices and wages.[38]

Wages. A conversion rule of cruzeiros into cruzados was applied to wages: the real wage in cruzados was equal to the average real wage of the six preceding months (September 1985 to February 1986).[39] Moreover the government conceded a bonus of 8% on all wages. This decision, essentially a political one, led to a redistribution of income towards workers in the post-shock economy and therefore altered the initial aim of neutrality. The government reinforced this redistributive policy by fixing the minimum salary in cruzados at a level which was 15% higher than its real average value in cruzeiros of the six preceding months.

A specific rule for future wage adjustments was also set: there would be an automatic adjustment of 60% of yearly inflation, if the rate of inflation should be lower than 20% (per year). But if cumulative inflation, since the last adjustment, exceeded 20%, wage indexation would be 100%.[40] This wage rule did not limit the number of adjustments of 20% through the year.

Exchange rate. The exchange rate was fixed against the dollar at the rate of 27 February 1986.

Rents. In principle, the government should have adopted an identical conversion mechanism as the one used for wages. Nevertheless, before the Cruzado Plan, rents were only readjusted by 80% of past inflation, every six or twelve months. This partial indexation rule led to a progressive real reduction of the average rent. The government therefore decided to use a 'forward-looking' rule: rents were updated to 28 February 1986, then deflated with an hypothetical monthly inflation rate of 14.6% (0.45% a day).[41] Commercial rents, which were not included under the partial indexation mechanism, would be converted into cruzados following the rule of the average real level between readjustments.

Financial contracts. For indexed financial operations (with postfixed interest rate), the real interest rate added to the rate of inflation became the nominal interest rate in cruzados. Indexed financial instruments for a period of less than one year were forbidden, except for savings accounts which were to be indexed three times a year. Financial contracts at prefixed cruzeiro rates were converted into cruzados with a future depreciation rate of 0.45% a day. This (arbitrary) conversion rate, was based on the average inflation rates between December 1985 to February 1986.[42]

The government did not make any precise announcement on future monetary and fiscal policy, but the main concern of economists was to avoid any recessive impact. Monetary policy should adjust to the increase of the real demand for money resulting from price stability. Interest rates were greatly reduced: the aim being to reduce the 'financial costs' of firms and to signal an expected reduction of inflation. A fall in interest rates also implied a reduction of the burden of the domestic public debt service, and low interest rates should also stimulate investment which had been greatly reduced with the adjustment policies of 1980 to 1983. The monetary policy must be passive; therefore, the economic authorities were planning a monetary policy following F. Lopes's initial heterodox shock proposition. From the beginning of the Cruzado Plan the government paid no attention to speculative behaviour which greatly jeopardised the sustainability of the stabilisation plan. Concerning fiscal policy, the authors of the plan considered that the adjusted deficit was compatible with stable post-shock prices, and thus no fundamental correction was required.

The Cruzado Plan followed the rules for heterodox shock, with monetary reform as an instrument designed to guarantee the distributive neutrality of the programme. Meanwhile, the wage policy implied a redistribution of income towards workers. With the introduction of the 'moving scale' at 20%, the government satisfied a long-standing demand of the unions and political opposition. This rule apparently had the aim of protecting real wages in case of an inflationary acceleration, but at the risk of introducing a large factor of

instability. Certain economists thought that this rule signalled an element of governmental self-discipline, showing the intention of the economic authorities to keep inflation at a low level.

The commitment to maintain price stability was supposed to be strengthened by the announcement of the Minister of Finance that the objective of the government was 'zero inflation'. Several government economists were worried over the fixing of certain prices at too low a level, but the 'zero inflation' commitment prevented any corrective price adjustment for an excessively long period.

The Results of the Cruzado Plan

The analysis of the evolution of the Cruzado Plan can be divided into three phases:

A state of grace and first problems: March to July 1986;
The Cruzadinho and widespread excess demand: July to October 1986;
The Cruzado Plan II and the end of Cruzado: November 1986 to April 1987.

In the first phase, the government succeeded in stabilising prices, but the first problems of disequilibria in the goods and financial markets appeared. In the second phase, a situation of widespread excess demand developed, whereas in the third phase the government let the repressed inflation loose and an inflationary explosion was to herald the failure of the Cruzado Plan.

State of grace and first problems: March to July 1986

Despite the criticisms of the opposition, which depicted the Cruzado Plan as 'a strategy for unemployment', the stabilisation programme was welcomed with enthusiasm by the people. A general strike against the new policy had to be suspended due to a lack of popular support. The initial impact of the heterodox shock upon inflation is impressive: consumer prices, which had increased by 12.6% in February, fell by -0.11% in March (Table 2). In the period of April to July, average inflation was 1.2% a month, or an annual rate of 15.4% against 300-400% in the pre-cruzado period.

However, different components of the price index did not show uniform behaviour. The prices of clothes and transport showed larger increases, of 3-6% a month. In textiles, seasonal changes brought about the introduction of new products, and the 'new' prices could differ from the official controlled prices. In fact price controls induced firms to overestimate new product prices (overpricing) : the government sets maximum prices, thus giving an incentive for firms to fix their prices at higher levels and, eventually, propose price reductions according to market conditions. But the price index only took

'window' prices into account. The increase in transport sector prices was caused by a spurt of inflation in the second- hand car market. Demand for both new cars and second-hand cars was growing strongly. Moreover, the prices of new cars had been set at too low a level. A low current real price of new cars, with the expectation of possible future price readjustments, resulted in an increase in demand, which also showed a strong impact on the 'flexi-price' second- hand car market.

On the whole, the Cruzado Plan appeared to be a huge success: inflation fell to levels that would have been unimaginable a few months earlier and, contrary to the predictions of the opposition, there was a strong expansion in economic activity. The President, J. Sarney, and his Finance Minister, D. Funaro, were at the peak of their popularity. The Cruzado Plan became the government's most important card in the elections to be held in November.

Aggregate demand and production growth was fairly impressive: the retail sales index increased by about 40% between March and July (Table 3) and industrial output grew by 12.4% compared to the second quarter of the previous year (Table 4); the unemployment rate fell from 4.4% in February to 3.1% in July (Table 5).

Wages showed a strong and rapid increase (Table 2), due to the payment of bonuses and a growing number of hours worked (Table 5),which added to the 8% bonus and the minimum wage increase implemented by the government. The real wage increase was greater in the more competitive markets: it reached 32% between February and July for independent workers. The growth of real wages added to the demand expansion.

The state of grace of the Cruzado Plan would not last much longer. The excess demand in the car market showed the first signs of overheating of the economy and repressed inflation. In July, there were widespread signs of quantitative rationing on the car market, waiting lists, and the payment of 'unofficial' bonuses (side payments). The quantitative rationing gradually extended itself to an increasing number of markets. Supply problems were adding to the demand boom. In certain sectors such as meat production, the accumulation of speculative stocks, due to the increase in expected real profits, led to the disappearance of meat at official prices. Problems were also being revealed in other markets: conflicts between the producers of final goods and their suppliers over the price of intermediate goods, leading to a fall in supply or a decline in the quality of products.

Given the lack of statistics on 'over-pricing' or registers of waiting lists, it is difficult to measure the magnitude of the quantitative rationing problem. Table 6 shows an indirect indicator of repressed inflation: the ratio of prices of new cars relative to second-hand cars. In July, second-hand cars were *more expensive* than new cars by 20%. The problem of repressed inflation, restricted

to certain sectors in June-July, turned into a generalised problem in the third quarter of 1986.

The large increase in real wages and an over-expansionary monetary policy were the sources of the widespread excess demand. The monetary base increased by 167% between March and July (Table 7) and the quantity of real money (M1) showed an increase of 183% in the same period (Table 8). The expected process of remonetisation of the economy therefore took place: price stability eliminated the inflation tax on monetary assets and led to an increase in the demand for real cash balances. The result was a reallocation of domestic financial portfolios with a larger proportion of liquid assets, whether indexed or with a prefixed interest rate (Table 8).

It is difficult to estimate the impact on the real demand for money of the change in the inflationary regime, and therefore difficult to evaluate with any accuracy the monetary policy. Nevertheless, the movements in the larger financial aggregates, as well as the foreign exchange market and the stock exchange index, show an excessive monetary expansion. Between February and July, M4 grew by 20.8%, 13% in real terms (Tables 7 and 8); there was, therefore, not only a substitution effect from interest-bearing (less liquid) domestic financial assets to domestic monetary assets, but also a growth in overall monetary aggregates. Very high domestic interest rates could lead to a fall in the demand for foreign financial assets, that could, in turn, explain the increase in M4, without revealing a situation incompatible with price stability. Yet this was not the case: the nominal interest rate was very low and the monthly real *ex-post* interest rate was close to zero (Table 9).

For a large portion of the market, the expected real interest rate was probably strongly negative, which partly explains the demand 'boom' for consumer durables (Table 4) and the spurt of property speculation. Between April and July, the index of real property values increased by 62.2% (Table 9).

On the foreign exchange market, after the favourable impact of the first few days of stability, the value of the dollar on the 'black market' took off. The difference between the free exchange rate and the commercial exchange rate fixed by the government went from 26% in March to 73% in July (Table 9). The stock market, like the property market, also appeared to be carried by a 'speculative bubble': in two months, March to April, the stock index rose by 130% (Table 9).

Several government economists were very worried by the widespread situation of excess demand, but the political authorities, enraptured by the initial success, refused any major readjustment before the November elections.[43] Moreover, a large proportion of the government's economic advisors wrongly judged the situation to be favourable: they believed that there were a few localised problems of excess demand, but that the large growth of investment in

progress would in the end allow an increase in production capacity, and therefore increase growth. Such a rationale dangerously ignored the role of expectations in the demand decisions of consumers and in the supply – net of stocks – of producers. The error was repeated in their refusal to allow a domestic interest rate increase which, following this train of thought, would imply an increase in financial costs, an increase in inflationary expectations, and a contraction of investment which should balance the goods market. In fact, the problem was such that, given the inflation expectations of the private sector, too low interest rates were leading to a destabilising demand 'boom' in the goods and financial assets markets.

The Cruzadinho and widespread excess demand: August 1986 to October 1986. On 24 July the government announced a new mini-package of fiscal adjustment measures, but this attempt to reduce demand was far from being enough to influence the run of events. A system of 'forced savings' was adopted increasing taxes on new cars and on fuels. The income from such taxes would be reimbursed to the taxpayers after three years. These indirect taxes were created under the cover of a scheme of forced savings which would justify the later exclusion of these price increases from the consumer price index. These fiscal measures were clearly insufficient to eliminate the excess demand for goods, and were particularly useless in counteracting foreign exchange and property market speculation.

In any case, the continuous manipulation of the price index risked producing a credibility loss for the index adjusted savings accounts, because it could underestimate inflation.[44] Under these conditions, an expectation of an acceleration of inflation would lead to a substitution effect from domestic financial assets – indexed and non-indexed – to foreign assets: it would thus result in extra demand pressure on the foreign exchange market. In the presence of a 'good' domestic indexed asset, the flight from non-indexed monetary assets would be partly absorbed by indexed accounts and thus would limit the negative impact on the free market in foreign exchange.

Although in July the government was perhaps still in a position to avoid the disintegration of the stabilisation programme, a different fiscal policy and a major monetary adjustment would have been necessary. For example, an increase in direct taxes could have reduced disposable income without leading to widespread price increases. Certainly those prices which were frozen at too low a level on 27 February should have been adjusted. Had these prices been increased much earlier, the first signs of quantitative rationing would have been avoided.

An increase in the nominal interest rate would also have been necessary to counteract the excessive demand for foreign exchange and property speculation that would in time lead to an increase in rents. However, when inflationary

expectations are very unstable and the Central Bank follows a passive discount policy, a large increase in expected inflation can lead to an expansion in the demand for credit despite a rise in the nominal interest rate. In such an environment, the rationing of credit could therefore become a very effective post-stabilisation monetary instrument.

In August, the economy showed the first signs of a 'contamination effect': the progressive extension of quantitative rationing raised the probability, in consumers' perception, that non-rationed markets would in turn be affected. A precautionary purchasing 'boom' resulted, effectively bringing this about in non-rationed markets. Moreover, the price increases decided upon by the government in July risked signalling to the private sector that subsequent adjustments could take place in other markets. An intertemporal consumption substitution effect took place, strengthening the destabilising impact of the contamination effect.

In the period from August to October, 'official' inflation slightly increased to reach a monthly rate of 1.8% against a rate of 1.2% in the preceding period. This figure, however, masked the payment of unofficial premiums added to official prices which was then a normal practice, as well as introducing new products (brands) and a fall in quality of goods already for sale. The expectation of price liberalisation brought about not only an increase in consumers' demand, but also an increase in firms' stocks, whose expected real interest rate fell. The net supply to the market decreased and the degree of excess demand increased. Also, the presence of bottlenecks in intermediate goods production and price conflicts with suppliers limited many firms' production to a level beneath their productive capacity.[45]

Table 6 shows that, despite the 30% price increase for new cars in August, the price of second-hand cars was still higher a month later. Real wages increased continuously. Property speculation appeared to be limitless: the real value index rose by 76% between July and October, 186% since the beginning of the Cruzado Plan. By this point, the stock exchange was already predicting the future economic events and the stock exchange index fell by 40% (July-October) to the pre-Cruzado Plan levels of the second quarter of 1985 (Table 9).

On the exchange rate market, the expectation of an inflationary acceleration and the adjustment of the commercial exchange rate that would result, led to a large devaluation of the 'free' rate of exchange. The premium of the dollar price on the black market reached 100% in October (Table 9). The rapid erosion of the balance of payments from the beginning of September intensified the expectation of a large adjustment of the commercial exchange rate: the surplus of the balance of trade was halved in September and went into deficit in October (Table 10). The problems of supply lead to a reduction in exports and an expectation of a devaluation of the official exchange rate induced firms to postpone the settlement of payment for exports in foreign exchange and to

increase imports. Moreover, the large premium on the price of the dollar on the black market encouraged the under invoicing of exports and the over-invoicing of imports, inducing a large deterioration of the external accounts.

In the third quarter of 1986, it was already obvious that not only was the monetary policy very expansionist, but also that the fiscal policy was far from being neutral. Price stability increased the real revenue of the Treasury, but the rise in public spending widened the budget deficit (Table 11).

Despite the gradual disintegration of the Cruzado Plan, the government took no action, waiting instead for November's elections. Economic policy during this period was limited to a battle of wills between the government and cattle-breeders, the former extremely concerned over the availability of meat supplies that could not be found at the official price. In October, the government announced a devaluation of the official exchange rate of 1.8%, a measure which only increased the confusion on the markets due to the lack of precise rules for future economic policy.

Cruzado II and the end of the Cruzado Plan: November 1986-April 1987

On 21 November, a week after the elections in which the ruling coalition partners were largely dominant, the government announced Cruzado Plan II: a large fiscal adjustment and a public price shock which would result in an inflationary explosion. The stated aim of the government was to obtain an increase in public sector incomes equivalent to 4% of GDP through an additional increase in indirect taxes and large adjustments of state companies' prices. To quote a few examples, the price of petrol rose by 60%, telephone rates by 35%, milk by 100% and new cars by 80%.

During November and December, the government adjusted the official exchange rate by mini-devaluations that were lower than the rate of inflation. The ensuing price adjustments eliminated excess demand in the goods market and freed the repressed inflation. The government made no announcement about the future indexation rules for public prices, neither for the exchange rate nor for those prices of the private sector that were still controlled. A climate of great uncertainty prevailed in the business community: at the end of the year the premium of the dollar on the black market stood at around 100%.[46]

Consumer prices increased by 3.3% in November and by 7.3% in December. The cumulative inflation since 27 February exceeded 20% and under the established wage rule there had to be an automatic adjustment of wages, which occurred at the end of January. A fast acceleration of inflation and a price-wage spiral were set off: prices increased by 16% a month in January and February 1987.

The deterioration of the balance of trade and the loss of foreign exchange

reserves forced the government to declare a moratorium on the foreign debt service. But this decision had a strong political rationale: the government was trying to regain the political consensus and public support which had evaporated with the failure of the Cruzado Plan.

In February, the economic authorities decided to simultaneously remove price controls and introduce a new monthly indexed financial asset. One year after the launch of the Cruzado Plan, inflation had increased even further and the 'moving scale' wage rule led to an even greater price instability.

The acceleration of inflation provoked a large fall of the real wage, which by May 1987 returned to the pre-Cruzado Plan level: a fall of 15 to 40%, depending on the sector, since November 1986 (Table 12). The real wage reduction brought about a contraction in consumption demand in the first few months of 1987.

The inflationary push from the Cruzado Plan II also triggered a process of rapid demonetisation of the economy. The role of the inflationary memory was then obvious. In the first half of 1987, real money balances (M1) fell by 60% and a substitution effect towards indexed domestic assets was the result. The M1/M4 ratio quickly found its pre-Cruzado Plan level (Table 8). From November onwards, nominal interest rates were on the rise, to reach 15-25% a month, by the first half of 1987 (Table 9).

The inflationary explosion, therefore, validated the speculative behaviour of the goods market and of financial assets. The 'speculative bubble' of the property market burst between October 1986 and January 1987: the real price fell by 50% (Table 9). The stock-exchange collapsed; the stock index fell 50% in real terms, 80% compared to its level at the beginning of the Cruzado Plan (Table 9). In the first few months of 1987, the government accelerated the devaluation of the cruzado and followed an implicit passive crawling peg rule to maintain competitiveness. The fulfilment of devaluation expectations and the increase in domestic interest rates resulted in a drop of the black market dollar premium which fell to 10-30%. In April, the expectation of a probable return to price controls and rumours of a 'new Cruzado' triggered preventive price increases by private firms and inflation reached 20%. In April, D. Funaro, Finance Minister during the Cruzado Plan, left the ministry.

The Lessons to be Drawn from the Cruzado Plan

The experience of the Cruzado Plan shows that a heterodox shock policy brings about an abrupt fall in the inflation rate without major adjustment costs in terms of production or employment. The initial impact of this stabilisation strategy is therefore very favourable: this is the result of the coordination effect of an active incomes policy.

The sustainability of a stable price regime depends greatly upon initial conditions: the relative fixed prices at the time of the shock, the initial budget deficit, and the current account balance as well as foreign exchange reserves at the start of the plan. If the government faces an excessive external transfer, capital flows being scarce, a 'too low' real wage may result, imposing a latent distributive conflict and jeopardising stability. Unfavourable initial conditions can lead to a rapid loss of credibility of the programme and destabilising expectations in the private sector. In certain cases, it may be appropriate to allow an over-adjustment of public prices or of the exchange rates in the period before the shock, which would in turn allow the absorption of post-shock residual inflation without necessarily setting off expectations of revisions of these prices.

In the period following price stabilisation, one would expect a process of remonetisation and a reversal of the fiscal lag leading to an improvement in real tax collection. Nevertheless, initially it is sensible to fix nominal interest rates at a rather high level to penalise portfolio shifts towards foreign currency as well as property market speculation. Furthermore, the credibility of the programme will be enhanced if higher domestic interest rates induce an increase in foreign reserves or a decrease of the black market (free exchange rate) premium if a regime of exchange rate controls prevails. Moreover, high interest rates will discourage the accumulation of stocks in the goods market. A policy of credit rationing and freely adjusting interest rates may be the appropriate instruments when the setting of the discount rate by the Central Bank is shown to be unsatisfactory.

From the beginning of the plan the government must implement a fiscal and monetary policy consistent with price stability. The uncertainty regarding the net effect of an inflationary regime change on aggregate demand requires a very flexible monetary and fiscal policy. An incompatible demand policy can lead to repressed inflation. The government must show a determined response to the first signs of quantitative rationing, or it will risk seeing a 'contamination effect' develop, thus inducing an explosive and generalised excess demand syndrome. In turn, the collapse of the stabilisation programme would probably follow rather soon.

The adjustment rules for wages must help to strengthen the anti-inflation consensus. A trigger indexation rule such as the one implemented during the Cruzado Plan introduces a strongly destabilising element. This non-linear indexation rule for wages can lead to a preference for higher inflation (Winograd and Verdier, 1989).

The shift in the inflationary regime resulting from the heterodox shock is very fragile. The abrupt fall in the inflation rate does not produce an instantaneous disappearance of the 'inflationary memory'. A 'bad signal' could rapidly trigger destabilising behaviour among relevant economic agents.

In the event of initial success in the stabilisation programme, the government must gradually remove the price controls on the most competitive sectors. There must be in-depth analysis of the optimal rules for a non-inflationary deregulation of prices and wages. Consistent trade liberalisation may enhance a successful removal of the price controls. The Cruzado Plan did not survive long enough to face such a problem.

The political constraints that may affect the course of the heterodox shock programme must be considered. The initial success of the plan gave the political authorities the impression that the 'state of the world' had effectively changed for ever. The excessive enthusiasm encouraged a total disregard for the fragility of the price stability of the new regime. The refusal of any adjustment in the programme, which could have reduced the short-term popularity of the incumbent politicians, became an insurmountable problem for the survival of the stabilisation plan.

Notes

1. For an analysis of the origins and the development of the 1985 Austral Plan in Argentina, see C.D. Winograd (1985a), D. Heymann (1986), G. Rosenwurcel (1986) and R. Frenkel and J.M. Fanelli (1987); for a comparative analysis of the case of Israel, see the study by M. Bruno (1986), R. Dornbusch and M.H. Simonsen (1987).

2. For a recent review of the literature on the theory of inflation, see H. Frisch (1983).

3. See R. Gordon (1982) for a study on the USA.

4. The relationship between inflation and variability of relative prices has been analysed by A. Cukierman (1983, 1984) and O. Kacef (1986).

5.In several countries the legal theory of unpredictable eventualities allows renegotiation of contracts, but the ensuing process is long and costly.

6. The relationship between inflation and real wages is analysed in detail in T. Verdier and C. D. Winograd (1988).

7. See G. Bry (1960).

8. On this subject, see R. Frenkel (1979).

9. The assumption here is that the mark-up is pro-cyclical; however, the empirical evidence is ambiguous. For the case of Brazil, see J. Camargo and E. Landau (1984) and F. Modiano (1985a).

10. The effect of rotation of manpower may permit firms to counteract salary indexation. From this perspective, excess demand in the labour market might influence the dynamic of wage settlements. Nevertheless, rotation is not expected to have a very significant effect, especially in the modern industrial sector.

11. The introduction of an imported good that is competitive with the I good does not alter the essential analysis. In the case of Brazil, the structure of customs protection excluded this type of good at the time of the Cruzado Plan.

12. The intermediate good could be the one that is exchangeable, i.e. T. The results would remain essentially unchanged, but the model would be reduced to four goods.

13. An alternative and more realistic specification of the industrial price would introduce an asymmetry in the adjustment of the margin of benefit. If, in the face of excess demand, there is no upper limit to the mark-up, there is nevertheless

a lower limit in case of excess supply (with $Q^{dT} > 0$).

14. For a detailed analysis of these experiments, see C. D. Winograd (1988).

15. For a detailed theoretical analysis, see T. Verdier and C.D. Winograd (1988).

16. Described in the literature as the Olivera-Tanzi effect, since they rediscovered it. See F. Graham (1928), C. Bresciani-Turroni (1937), J. Olivera (1967), V. Tanzi (1977) and G.H.B. Franco (1986).

17. C. Bresciani-Turroni (1937).

18. For a comparative analysis of the experience of hyperinflation and stabilisation in Germany in the 1920s and the chronic 'Latin' inflationary episodes, see C.D.Winograd (1985a).

19. During the negotiations with the IMF the economic authorities in Brazil defended the use of inflation-adjusted budget deficits, while the IMF imposed the concept of current account deficit. The first measure is undoubtedly more precise since it does not vary with variations in rates of inflation; i.e. it excludes the direct effect of inflation (as distinct from other real budgetary effects caused by variations in rates of inflation such as the effect of fiscal delay).

20. Estimates of deficit adjusted by inflation have been made for Brazil by D.D. Carneiro (1986a, 1986b).

21. Excluding, of course, other effects that may be produced at the time of price stabilisation.

22. This problem is developed in Winograd (1985a, 1985b).

23. See P. Arida (1982), R. Macedo (1983), F. Lopes (1984b, 1986b) and C.D. Winograd and T. Verdier (1989). For a macroeconomic analysis of the impact of wage indexation, see J. Gray (1976), S. Fischer (1977) and F. Modigliani and Padoa-Schioppa (1978).

24. For a detailed description of this scheme of resynchronisation of readjustments of nominal wages, see E. Modiano (1985c, 1986).

25. This argument can be extended to the case of hyperinflation. See C.D. Winograd (1985a).

26. The name Cruzado, later used to designate the new currency, appears for the first time in an article by F. Lopes (1986).

27. F. Lopes (1984a).

28. Lopes developed this idea, but it is found also in E. Modiano (1986a) and P. Arida and A. Lara Resende (1984).

29. See A. Lara Resende (1984 and P. Arida and A. Lara Resende (1984).

30. In 1946, in conditions of very high inflation, the Hungarian administration introduced an indexed currency: the result of this experiment was an inflationary explosion. See W.A. Bomberger and G.E. Makinen (1980).

31. The authors of the programme are aware of this: A. Lara Resende (1984) argues that the success of the IM programme requires the conversion of contracts to be done according to the rules laid down. So the insistence on the (apparently) voluntary nature of the programme seems to have a rhetorical element.

32. In C.D. Winograd (1985a) it is shown that the costs of adjustment associated with a policy of monetary control may become negligible when the economy reaches an explosive hyperinflation phase.

33. For a detailed analysis of the period 1979-1985, see E. Bacha (1983), D.D. Carneiro (1987) and J. Gómez Lorenzo (1987).

34. The public debt policy during this period has been analysed in detail by L. Passos Domingues (1986). For a study on the financing of the public sector, cf. R. Werneck (1986).

35. The impact of orthodox adjustment in response to the external sector imbalance is similar in Brazil and in Argentina. However, Argentina was not able to balance the current account; see J.M. Fanelli, R. Frenkel and C.D. Winograd (1987), and C.D. Winograd (1988).

36. Several authors consider that the initial conditions were very good: according to E. Modiano (1987), 'more than satisfactory'. We shall see that this statement has to be moderated.

37. Fixing the rates of change against the dollar therefore implied a devaluation of the cruzeiro against the European currencies and the yen (and the currencies linked to these).

38. This phenomenon of statistical post-shock inflation was seen to be very important in Argentina at the time of the Austral Plan in 1985. See J.M. Fanelli and R. Frenkel (1987).

39. E. Modiano (1897) gives a detailed explanation of the mechanism of conversion.

40. A preliminary version of the decree law had determined that there would be free negotiations without automatic indexation. It is in a second version that this indexation rule was introduced.

41. The factor of conversion is 0.73 for rents readjusted every six months and 0.53 for rents readjusted annually. See E. Modiano (1987).

42. At the time of the Austral Plan in Argentina (June 1985) a similar conversion rule had been used for fixed rate financial contracts. In Argentina the length of the contracts was generally a month, which made the application of a conversion rate linked to the inflation of the last pre-shock month less arbitrary. In Brazil, on the other hand, in February 1986 there were financial contracts with a longer term with different expected inflation rates according to the month of negotiation of the contract. Certain transfers of wealth, more significant than in Argentina, would therefore result, in particular for the oldest contracts (e.g., ten months pre-Cruzado), which included a lower anticipated rate of inflation.

43. D.D. Carneiro (1987) attributes crucial importance to this effect of political `paralysis'.

44. I thank André Urani for the suggestion that this problem might exist.

45. In the automobile sector, production diminished in the third quarter, in spite of the strong expansion of demand (see Table 3).

46. For analyses of the Cruzado Plan in the course of implementation, see P. Bodin (1986) and G.H.B. Franco (1986b).

STATISTICAL APPENDIX

Table 1
Macroeconomic Indicators

	1980	1981	1982	1983	1984	1985	1986
Consumer Price Inflation (%)	99.3	95.5	104.8	164.0	215.3	242.2	22.2
GDP Growth Rate (%)	9.1	-3.4	0.9	-2.5	5.7	8.3	8.2
GDP Per Capita Index[1]	100.0	94.7	93.6	88.9	91.9	97.5	103.1
Ratio Consumption/GDP (%)	79.3	79.2	80.7	82.9	78.9	78.3	79.0
Ratio Investment/GDP (%)	22.9	21.1	20.0	14.7	15.5	16.7	18.5
Ratio Exports/GDP (%)	8.9	9.4	7.9	11.2	13.4	11.9	8.5
Ratio Imports/GDP (%)	11.1	9.3	8.6	8.9	7.8	6.9	6.0
Real Exchange Rate[2]	96.9	89.7	91.8	111.3	108.6	110.5	100.0
Real Wage[2]	85.9	89.9	91.4	77.4	75.6	85.7	100.0
Balance of Trade[3]	-2.8	1.2	0.8	6.5	13.1	12.5	8.3
Exports[3]	20.1	23.3	20.2	21.9	27.0	25.6	22.4
Imports[3]	22.9	22.1	19.4	15.4	13.9	13.1	14.0
Current Account Balance[3]	-12.8	-11.7	-16.3	-6.3	0.0	-0.2	-4.5
Gross Nominal Foreign Debt[3]	63.9	71.9	83.3	91.6	102.0	105.1	111.0
Index[1]	100.0	112.6	130.4	143.5	159.8	164.7	173.9
Gross Foreign Debt - Index of Real Value[1]	100.0	102.1	111.4	118.7	126.8	126.2	130.8
Ratio Exports/Net Foreign Debt (%)	35.3	36.1	26.5	25.2	30.0	27.4	21.5
Ratio Foreign Debt Interest/ Exports (%)	31.4	39.3	56.3	43.6	37.8	40.6	34.0
Nominal Budget Deficit of the Public Sector (%) [4]	4.3	5.8	7.1	7.5	9.3	ng	ng
Adjusted Budget Deficit of the Public Sector (%) [4]	1.9	3.2	3.1	0.1	2.2	4.3	3.7

[1] Base index 1980 = 100
[2] Base index 1986 = 100
[3] In billions of current dollars
[4] Estimates by D. D. Carneiro (1986a) and Brasil Econômica, Banco Central do Brasil (1987)

ng - not given in source

Sources: Developed from data of the Banco Central do Brasil, IBGE, *Conjuntura Econômica*, FGV and *Macroeconômica*.

Table 2
Prices, Wages and Commercial Exchange Rates – Monthly Rate of Change %

		Salaries				Inflation										
						Consumption Price Index								Wholesale Price Index		
	Nominal Commercial Exchange Rate[1]	Modern Sector[2]	Workers Without Contract[3]	Self-Employ'd[4]	São Paulo Indus[5]	Total	Food	Housing	House-hold Items	Clothing	Public & Priv. Transp't	Health	Personal Spend.	Total	Agric	Indus
1985:																
Jan	11.3	-13.4	3.2	-0.8	7.2	11.8	11.4	10.8	11.4	8.9	12.8	13.7	13.5	13.2	10.2	14.4
Feb	12.1	10.8	6.8	8.5	7.0	10.9	10.5	9.7	10.7	8.4	10.5	11.1	15.5	8.9	8.7	8.9
Mar	10.8	6.3	10.3	10.7	6.3	10.1	9.5	11.4	11.7	11.2	9.2	10.9	9.9	13.7	10.8	14.9
Apr	13.4	9.0	2.4	8.1	14.5	8.2	7.5	7.6	12.3	15.8	5.4	14.2	5.3	7.2	6.9	7.3
May	10.7	18.4	17.9	12.4	24.1	7.2	5.7	4.4	11.3	14.7	7.2	8.9	7.1	6.0	11.1	4.2
Jun	9.8	11.2	14.7	15.8	9.5	8.5	8.5	5.2	11.5	11.7	10.3	7.5	7.4	8.0	13.6	5.8
Jul	8.5	8.4	12.5	9.6	12.4	10.3	12.9	8.2	11.9	9.6	10.2	7.8	7.6	7.2	5.6	7.9
Aug	7.8	11.2	14.0	17.0	8.3	12.1	14.4	9.5	12.2	11.6	10.0	9.6	13.6	15.8	22.6	12.9
Sep	11.3	10.3	5.6	17.4	3.7	11.1	11.1	9.1	11.6	13.9	10.3	8.9	13.9	9.7	10.0	9.5
Oct	9.6	10.5	10.4	2.4	19.4	10.6	10.6	11.1	12.0	13.8	9.6	10.1	8.7	9.9	4.6	12.4
Nov	9.0	29.4	26.1	30.3	21.0	14.0	16.5	11.6	13.0	12.7	12.7	14.3	12.8	17.9	29.7	12.9
Dec	11.7	30.5	26.1	18.1	7.0	15.1	17.2	13.5	12.1	11.1	18.6	9.9	13.3	10.1	6.1	12.0
1986:																
Jan	13.0	-7.9	10.1	15.9	18.2	14.4	16.5	13.5	10.9	8.9	16.4	9.8	14.5	20.2	27.1	16.9
Feb	15.4	11.2	7.0	6.1	12.6	12.7	13.0	12.1	11.6	8.5	10.7	11.2	19.8	19.5	19.6	19.6
Mar	6.5	7.3	8.9	19.5	12.0	-0.11	-3.5	0.1	2.0	6.3	1.4	1.9	1.2	-0.8	0.0	-1.3
Apr	0.0	6.4	7.5	2.5	2.4	0.8	-0.7	0.7	1.6	4.4	1.7	1.4	0.5	-1.4	-0.2	-1.8
May	0.0	4.7	10.1	10.9	2.5	1.4	0.2	0.8	2.3	7.0	1.9	0.5	1.1	0.1	0.7	-0.1
Jun	0.0	1.5	-1.4	8.8	0.6	1.3	0.5	0.6	2.1	4.1	2.2	0.5	0.9	0.4	0.7	0.3
Jul	0.0	6.5	6.8	10.4	3.6	1.2	0.1	0.8	1.9	2.0	3.4	0.3	1.1	0.5	1.2	0.2
Aug	0.0	3.2	4.2	9.2	3.1	1.7	0.4	1.0	2.2	2.3	4.2	0.3	1.1	1.3	2.5	0.9
Sep	0.0	2.6	3.4	-1.2	2.4	1.7	0.3	0.6	1.2	5.4	4.0	0.7	1.1	0.6	2.4	0.0
Oct	0.9	3.0	2.9	9.5	3.6	1.9	5.7	0.6	2.4	5.5	3.5	0.4	1.8	1.0	3.6	0.2
Nov	1.0	7.8	9.7	14.6	6.5	3.3	3.1	4.1	1.5	5.8	5.5	0.6	1.5	2.0	3.2	1.5
Dec	3.3	25.7	29.6	11.3	4.5	7.3	4.9	8.0	3.6	5.0	25.7	2.0	7.4	7.4	6.3	7.8

Table 2
Prices, Wages and Commercial Exchange Rates – Monthly Rate of Change %

		Salaries				Inflation										
						Consumption Price Index								Wholesale Price Index		
	Nominal Commercial Exchange Rate[1]	Modern Sector[2]	Workers Without Contract[3]	Self-Employ'd[4]	São Paulo Indus[5]	Total	Food	Housing	House-hold Items	Clothing	Public & Pers. Transp't	Health	Pers. Spend.	Total	Agric	Indust
1987:																
Jan	7.5	-9.9	-1.7	1.8	5.8	16.8	16.5	3.7	5.6	7.0	22.1	8.2	48.0	10.3	16.2	8.3
Feb	15.9	9.8	12.7	8.6	11.1	13.9	16.8	18.4	16.5	9.8	7.2	12.2	9.2	10.0	3.0	12.8
Mar	15.2	8.8	6.5	3.7	23.7	14.4	8.6	24.8	36.9	13.9	12.6	27.6	13.5	13.6	2.7	17.3
Apr	13.4	15.9	1.3	2.5	16.6	21.0	21.0	43.3	17.4	14.7	9.6	39.6	8.7	20.7	7.7	24.7
May	29.5	20.1	16.9	11.7	21.4	23.1	22.4	24.6	19.5	15.0	24.1	25.9	30.2	30.5	25.1	31.9
Jun	29.8	14.1	22.0	15.8	20.9	21.3	24.6	27.6	14.3	12.4	18.4	29.4	9.6	26.9	27.6	26.8
Jul	12.6	8.1	5.0	11.6	0.0	9.9	10.4	8.7	6.5	8.3	4.2	5.4	21.0	9.7	16.9	7.9

[1] Calculated from weighted averages
[2] Workers with work permits
[3] Workers without work permits (particularly the construction industry)
[4] `Conta propia'
[5] FIESP wages

Sources: Developed from IBGE and *Conjuntura Econômica* data.

Table 3
Demand Indicators

	General Sales Indicator[1] (%)	Cement	
		Production	
		In thousand of tonnes	Rate of Change[2] (%)
1983	-11.7	20,586	-19.1
1984	-11.1	19,488	-5.3
1985	9.1	20,612	5.8
1986	39.4	25,257	23.8
1985:			
January	-2.9	1,456	-5.9
February	-11.3	1,450	-3.1
March	12.4	1,667	7.9
April	-3.9	1,389	-6.3
May	22.5	1,604	-9.7
June	8.8	1,632	16.2
July	6.0	1,731	3.6
August	17.5	1,949	12.6
September	0.7	1,882	15.5
October	21.1	2,003	11.1
November	19.6	1,963	9.7
December	18.2	1,886	16.8
1986:			
January	19.6	1,789	22.9
February	25.7	1,599	10.3
March	14.5	1,661	-0.4
April	49.3	1,841	32.5
May	34.4	2,150	34.0
June	27.6	2,046	25.4
July	55.5	2,241	29.5
August	43.3	2,361	21.1
September	34.7	2,322	23.4
October	60.7	2,480	23.8
November	62.7	2,404	22.5
December	44.1	2,363	25.3
1987:			
January	n.a	2,331	30.3
February	n.a	2,097	31.1
March	n.a	1,910	15.0
April	n.a	1,970	7.0
May	n.a	2,094	-2.5
June	n.a	1,802	-11.9
July	n.a	2,043	-8.8

[1] São Paulo. Change compared to the same time the previous year (%)
[2] Change compared to the same time the previous year (%)
n.a. No data available

Motor Vehicles				Television Sets	
Production		Sales		Sales	
In Units	Rate of Change[2]	In Units	Rate of Change[2]	In units	Rate of Change[2]
895,997	4.2	908,865	5.5	1,213	-18.0
865,037	-3.5	853,619	-6.1	1,240	2.2
967,614	11.9	973,045	14.0	1,542	24.4
1,056,263	9.2	1,013,080	4.1	2,205	43.0
78,676	26.0	74,574	28.8		
70,674	-4.2	73,062	8.5		
84,407	21.8	87,529	27.5	269	8.9
37,024	-34.3	35,585	-49.5		
48,654	-39.8	53,564	-30.4		
70,415	-1.2	65,961	11.8	392	44.6
99,953	41.5	96,884	47.7		
94,391	11.0	94,521	16.3		
96,625	40.5	100,791	37.9	444	32.9
112,612	44.0	109,925	36.6		
99,041	15.5	98,473	19.8		
75,155	19.71	82,176	16.4	437	12.6
80,248	2.0	67,545	-9.4		
84,901	20.1	86,013	17.8		
99,384	17.7	101,307	15.7	325	20.8
102,467	176.8	99,532	179.7		
102,450	110.6	104,013	94.2		
94,400	34.0	94,852	43.8	722	84.2
87,321	-12.5	90,371	-6.7		
80,118	-15.1	79,848	-15.5		
103,068	6.7	87,334	-13.4	549	23.6
92,952	-17.5	78,932	-28.2		
66,439	-32.9	40,481	-58.9		
62,515	-16.8	82,852	0.8	609	39.4
72,739	-9.4	55,514	-17.8		
68,152	-19.7	71,836	-16.5		
66,050	-33.5	62,559	-38.2	439	35.1
84,274	-17.8	90,166	-9.4		
82,550	-19.4	82,803	-20.4		
85,196	-9.8	75,815	-20.1	393	-45.6
79,794	-8.6	90,071	-0.3		

Source: Developed from *Conjuntura Econômica* data.

Table 4
Industrial Production by Sectors. Base mid-1985 = 100

	Capital goods	Intermediate goods	Consumer Durables	Non-durable Consumer goods	Total
1980	139.8	94.7	116.3	92.6	101.7
1981	112.6	84.2	87.3	93.6	91.3
1982	95.9	86.6	94.3	95.6	91.3
1983	77.5	84.5	93.5	90.9	86.6
1984	86.3	89.7	80.2	88.4	88.9
1985	100.0	100.0	100.0	100.0	100.0
1986	121.7	108.5	120.4	108.9	111.2
1985					
January	91.6	91.8	88.7	89.9	90.9
February	84.5	85.3	82.8	82.0	84.0
March	99.2	95.3	96.7	89.6	93.9
April	82.4	86.7	65.8	86.7	84.4
May	91.0	97.5	80.0	97.4	95.2
June	93.9	100.0	90.5	96.7	98.2
July	107.3	107.6	113.4	109.2	108.4
August	109.3	110.0	110.5	110.7	110.5
September	111.5	107.0	120.1	106.3	108.5
October	119.2	115.6	134.5	119.8	118.6
November	109.9	103.9	123.3	109.6	107.9
December	99.6	98.9	93.8	101.5	99.2
1986:					
January	104.3	100.5	104.9	102.1	101.6
February	103.1	93.7	108.0	92.5	95.5
March	107.6	97.3	118.1	90.3	97.7
April	119.1	98.9	122.0	96.0	101.8
May	115.5	103.4	131.2	102.8	106.2
June	131.1	108.5	128.0	107.4	112.4
July	132.0	116.4	117.7	122.7	121.5
August	127.5	117.1	119.4	118.4	120.5
September	138.4	121.5	141.4	121.8	126.9
October	143.0	126.8	141.9	129.1	132.5
November	129.3	112.1	117.9	117.0	111.4
December	109.2	105.4	94.5	106.7	106.4
1987:					
January	113.6	106.9	106.4	106.7	108.1
February	116.7	13.07	116.2	105.5	107.4
March	122.5	109.5	115.8	107.1	111.6
April	122.9	107.6	120.5	105.3	110.5
May	122.6	109.2	117.3	107.4	111.8
June	122.8	111.6	118.7	109.5	114.7
July	121.3	112.9	87.9	112.8	114.0
August	112.3	113.0	108.8	112.7	114.7
September	121.2	116.2	124.2	119.0	119.9
October	125.5	119.4	126.9	120.6	123.3

Source: Developed from IBGE data

Table 5
Industrial Unemployment and Employment

	Rate of Unemployment (%)[1]		Employees in São Paulo Industry[3]	Hours worked in São Paulo Industry[4]
	Average[2]	São Paulo		
1980	6.42	5.63	113.2	113.8
1981	7.91	7.27	105.4	99.8
1982	6.18	5.85	100.2	93.8
1983	6.70	6.80	92.4	84.5
1984	7.12	6.78	92.2	87.8
1985	5.25	5.03	100.0	100.0
1986	3.58	3.34	110.0	111.7
1985:				
January	6.31	6.02	96.4	92.6
February	6.12	5.97	97.4	91.4
March	6.48	6.16	98.2	98.7
April	6.08	6.00	98.6	92.2
May	5.93	5.66	98.8	98.0
June	5.63	5.56	99.1	97.5
July	5.35	5.16	99.8	103.9
August	5.03	4.82	100.6	105.1
September	4.77	4.52	101.7	104.0
October	4.28	4.10	102.7	110.2
November	3.90	3.56	103.4	105.5
December	3.15	2.70	103.8	100.3
1986:				
January	4.18	4.09	105.2	103.9
February	4.40	4.40	106.5	101.8
March	4.39	4.19	107.4	107.2
April	4.17	4.06	107.8	108.6
May	4.08	3.73	108.3	109.5
June	3.76	3.37	109.5	110.4
July	3.60	3.09	110.7	115.8
August	3.50	3.20	111.6	115.8
September	3.23	2.93	112.8	118.9
October	2.98	2.89	113.3	122.4
November	2.64	2.43	113.6	115.2
December	2.16	1.75	113.1	110.9
1987:				
January	3.19	3.25	113.6	112.1
February	3.38	3.12	114.7	110.9
March	3.28	3.12	114.6	115.7
April	3.39	3.46	114.6	114.0
May	3.97	3.78	114.5	115.8
June	4.43	4.45	112.8	114.4
July	4.47	4.57	111.4	112.9
August	4.22	4.63	110.3	110.7
September	4.03	3.95	110.2	110.9

[1] From May 1982, the calculation method was changed.
[2] Including the metropolitan regions of Belo Horizonte, Rio de Janeiro, São Paulo, Porto Alegre
[3] and [4] FIESP indicator base mid-1985=100

Source: Developed from IBGE and *Conjuntura Econômica* data.

Table 6
Indicators of Suppressed Inflation
Ratio of Second-Hand Car Prices to New Car Prices

	Selected Models Price Ratios (Second Hand/New)[1]		World Price Index of New Cars Monthly Rate of Change (%)	World Price Index Ratio Secondhand/New April 1986=100
	Fiat Uno CS	Volkswagon Golf S		
1986:				
April	95.8	105.8	0.0	100.0
May	95.1	106.5	0.0	104.0
June	105.1	116.4	0.0	110.5
July	115.4	130.4	0.0	121.2
August	85.1	105.3	33.0	96.9
September	87.3	112.3	0.0	102.2
October	91.0	116.5	0.0	107.5
November	62.9	50.1	10.5	103.9
December	81.0	68.9	82.0	70.4
1987:				
January	107.1	88.5	0.0	81.0
February	107.6	89.9	0.0	87.6
March	80.8	74.5	9.7	77.2
April	64.7	61.2	24.3	56.8

[1] Nominal Cruzado Price Ratios. The price of new cars includes 'the refundable tax' that was introduced in August 1986

Source: Developed from data from R. L. Loma Vanna (1988) and Fiat do Brasil.

Table 7
Monetary Aggregates (Monthly Rate of Change %)

	Monetary Base	M_1[1]	M_2[2]	M_3[3]	M_4[4]
1980[a]	56.9	70.6	66.2	72.6	68.7
1981[a]	69.9	87.7	135.3	140.7	140.5
1982[a]	86.8	66.7	91.9	104.7	110.8
1983[a]	79.8	97.4	96.5	141.9	150.5
1984[a]	264.1	201.9	358.6	288.8	292.7
1985[a]	257.3	304.3	332.0	310.4	303.9
1986[a]	293.5	306.7	119.9	51.6	94.8
1985 [b]:					
January	4.3	-10.0	7.8	10.3	11.8
February	13.6	12.8	10.6	12.4	12.0
March	-4.3	10.2	13.8	11.7	11.8
April	1.2	10.7	16.9	15.4	13.8
May	13.2	8.4	16.7	13.3	13.2
June	7.9	19.0	15.9	13.5	13.9
July	10.1	11.0	16.0	12.0	11.4
August	14.0	14.1	13.0	9.7	10.1
September	15.1	16.0	10.6	11.4	10.3
October	4.1	3.8	13.0	12.3	12.1
November	19.7	24.3	12.4	11.6	10.6
December	41.6	33.4	16.1	16.5	17.2
1986 [b]:					
January	1.0	-8.9	6.7	12.3	12.4
February	12.2	14.1	13.4	15.1	16.4
March	35.9	80.1	29.4	15.8	12.2
April	35.4	19.4	6.4	2.3	1.0
May	15.0	15.1	6.4	4.3	2.8
June	10.6	15.9	4.9	4.1	3.3
July	14.1	-0.2	-1.6	-0.5	0.4
August	6.0	6.8	4.0	3.3	5.2
September	2.8	5.7	4.1	4.1	5.5
October	5.2	7.2	0.9	1.0	3.4
November	9.4	4.7	0.1	0.2	2.0
December	3.7	7.9	9.8	8.1	5.0
1987 [b]:					
January	-3.6	-22.0	-5.1	-0.2	5.3
February	-4.7	6.0	14.8	18.1	16.3
March	3.0	10.6	12.9	17.0	12.4
April	10.5	-14.4	6.5	11.0	11.2
May	-1.3	0.5	26.2	26.1	24.6
June	-7.9	32.7	20.5	22.3	18.9
July	28.8	9.5	10.3	13.5	14.3
August	23.9	8.2	5.4	5.8	4.7
September	19.8	10.6	10.7	9.3	7.3

[a] Rate of change over 12 months, in December
[b] Monthly rate of change at the end of the period

[1] M_1: Notes and coins + current accounts
[2] M_2: M_1 + Public debt securities excluding Central Bank
[3] M_3: M_2 + Savings accounts
[4] M_4: M_3 + Time deposits

Source: Developed from data from Banco Central do Brazil.

Table 8
Monetary Aggregates (in real terms). Base Mid-1985=100

	M_1[1]	M_2[2]	M_3[3]	M_4[4]	M_1/M_4
1980[a]	187.5	72.7	63.5	58.5	40.9
1981[a]	183.3	88.6	78.4	73.4	31.9
1982[a]	150.0	84.1	79.7	76.6	25.0
1983[a]	108.3	59.0	70.3	69.1	20.0
1984[a]	108.3	84.1	87.8	88.3	15.7
1985[a]	125.0	111.4	105.4	104.3	15.3
1986[a]	316.7	154.5	129.7	127.7	31.7
1985:					
January	83.3	79.5	86.5	88.3	12.0
February	83.3	79.5	87.8	88.3	12.0
March	83.3	81.8	89.2	90.4	11.8
April	83.3	88.6	94.6	94.7	11.2
May	91.7	97.7	100.0	100.0	11.7
June	100.0	104.5	104.1	105.3	12.1
July	100.0	109.1	106.8	106.4	12.0
August	100.0	111.4	104.1	104.3	12.2
September	108.3	111.4	105.4	105.3	13.1
October	100.0	113.6	105.4	106.4	12.0
November	108.3	111.4	105.4	103.2	13.4
December	125.0	111.4	105.4	104.3	15.3
1986:					
January	100.0	104.5	91.9	91.5	14.0
February	100.0	104.5	105.4	106.4	12.2
March	175.0	131.8	118.9	114.9	19.4
April	208.3	138.6	121.6	116.0	22.9
May	233.3	147.7	125.7	118.1	25.2
June	275.0	152.3	128.4	120.2	29.2
July	266.7	150.0	127.0	120.2	28.3
August	283.3	152.3	129.7	124.5	29.1
September	291.7	156.8	133.8	129.8	28.7
October	316.7	156.8	133.8	133.0	30.4
November	316.7	152.3	128.4	130.9	30.9
December	316.7	154.5	129.7	127.7	31.7
1987:					
January	208.3	125.0	110.8	114.9	23.1
February	200.0	127.3	114.9	118.1	21.6
March	191.7	125.0	117.6	116.0	21.1
April	133.3	111.4	108.1	106.4	16.0
May	108.3	113.6	110.8	107.4	12.9
June	125.0	111.4	110.8	105.3	15.2
July	116.7	113.6	114.9	109.6	13.6
August	125.0	113.6	116.2	109.6	14.6
September	125.0	115.9	117.6	109.6	14.6
October	125.0	120.5	118.9	108.5	14.7

[a] December

[1] M_1 = notes and coins + current accounts
[2] M_2 = M1 + Public debt securities excluding Central Bank
[3] M_3 = M2 + Savings accounts
[4] M_4 = M3 + Time deposits
Deflated by the consumer price index

Source: Developed from data from Banco Central do Brazil.

Table 9
Returns on Financial Assets and Property Prices

	Variation in dollar rate on free market %[1]	Ratio (x 100) of free dollar rate to commercial rate	São Paulo Stock Exchange		Nominal Interest Rate[1]			Consumer Price Inflation Rate %[1]	Real Interest Rate[3]			Real Price Index of Property[4]
			Rate of nominal return %[1]	Index of Real Value[2]	Savings Account	Certificate of Bank Deposit %	Very Short Term Overnight Market %		Savings Account	Certificate of Bank Deposit %	Very Short Term Overnight Market %	
1985:												
Jan	4.1	110.2	15.0	75.8	13.2	13.9	12.6	11.8	1.25	1.88	0.71	66.6
Feb	22.4	122.8	-7.3	63.8	10.8	11.5	10.8	10.9	-0.09	0.54	-0.09	
Mar	7.5	116.9	5.4	59.6	13.3	14.3	11.8	10.0	2.91	3.81	1.54	
Apr	7.0	113.5	-6.7	51.9	12.4	13.2	11.9	8.2	3.88	4.62	3.42	100.6
May	17.8	118.6	39.0	66.9	10.6	11.2	10.7	7.2	3.17	3.73	3.26	
Jun	13.5	122.9	44.0	89.3	9.8	10.5	9.6	8.5	1.20	1.84	1.01	
Jul	25.9	144.3	20.4	98.7	8.1	8.8	8.5	10.3	-2.00	-1.36	-1.63	96.8
Aug	2.8	134.2	39.6	120.9	8.7	10.0	8.0	12.1	-3.03	-1.87	-3.66	
Sep	8.1	129.1	11.5	123.5	9.7	10.0	8.8	11.1	-1.17	-1.00	-1.98	
Oct	7.0	127.9	45.1	164.3	9.6	9.9	9.4	10.6	-0.90	-0.63	-1.08	136.2
Nov	16.8	138.0	11.0	158.8	11.7	12.0	9.3	14.0	-2.02	-1.76	-4.12	
Dec	17.6	146.8	-9.8	126.5	13.9	14.3	11.7	15.1	-1.04	-0.70	-3.0	
1986:												
Jan	6.8	134.1	7.1	114.9	16.8	17.3	14.7	14.4	2.10	2.53	0.30	159.3
Feb	19.2	142.3	11.6	111.6	14.9	15.4	12.5	12.7	1.95	2.40	-0.17	
Mar	-9.1	126.5	53.1	161.8	0.5	0.9	0.6	-0.11	0.61	1.01	0.71	
Apr	14.7	144.5	51.0	245.8	1.3	0.9	0.8	0.8	0.50	0.10	0.0	145.4
May	3.1	149.6	-5.1	232.4	1.9	1.1	0.7	1.4	0.49	-0.30	-0.70	
Jun	2.0	151.7	-5.1	219.3	1.8	1.2	0.8	1.3	0.50	-0.10	-0.49	
Jul	14.6	173.4	-3.1	211.2	2.2	1.8	1.1	1.2	1.00	0.60	-0.10	235.9
Aug	-6.4	166.2	-11.1	185.3	2.2	2.1	1.5	1.7	0.49	0.39	-0.20	
Sep	9.1	176.3	-17.9	150.4	2.2	2.6	1.7	1.7	0.49	0.88	0.0	
Oct	12.5	198.7	-11.0	132.0	2.4	2.8	1.9	1.9	0.49	0.88	0.0	416.2
Nov	7.0	205.7	9.4	141.0	3.8	4.6	2.4	3.3	0.48	1.26	-0.87	
Dec	-10.0	181.3	-20.6	104.1	6.8	8.0	5.2	7.3	-0.47	0.65	-1.96	

Table 9
Returns on Financial Assets and Property Prices

	Variation in dollar rate on free market %[1]	Ratio (x 100) of free dollar rate to commercial rate	São Paulo Stock Exchange		Nominal Interest Rate[1]			Consumer Price Inflation Rate %[1]	Real Interest Rate[3]			Real Price Index of Property[4]
			Rate of nominal return %[1]	Index of Real Value[2]	Savings Account	Certificate of Bank Deposit %	Very Short Term Overnight Market %		Savings Account	Certificate of Bank Deposit %	Very Short Term Overnight Market %	
1987:												
Jan	-1.2	161.5	-13.4	80.5	17.6	13.4	10.8	16.8	0.68	-2.91	-5.14	222.4
Feb	16.7	161.7	-20.5	56.1	20.2	21.0	19.6	13.9	5.53	6.23	5.0	
Mar	-6.7	140.0	4.6	51.0	15.1	13.5	12.0	14.4	0.61	-0.79	-2.10	
Apr	14.3	133.7	16.3	49.4	21.6	20.7	15.3	21.0	0.50	-0.25	-4.71	234.2
May	12.5	108.8	-2.9	37.6	24.1	25.8	24.6	23.1	-0.81	2.19	1.22	
Jun	44.4	124.5	19.6	35.7	18.6	19.0	18.0	21.3	-2.23	-1.90	-2.72	
Jul	7.7	126.0	32.8	43.4	8.9	9.5	8.9	9.9	-0.91	-0.36	-0.91	164.1

[1] Monthly rate
[2] Deflated by the general price index, FGV Index base 1985=100
[3] $[(1+i)/(1+p)] - 1$ where i=nominal interest rate[3] and p=inflation rate[4]
[4] Price per square metre M^2, Rio de Janeiro, deflated by the general price index, FGV

Sources: Developed from data from Andima, ABECIP and Macrometrica

Table 10
Balance of Trade
Exports and Imports - Monthly data (in millions of dollars)

	EXPORTS			IMPORTS			Balance of Trade
	Raw Materials	Manufactures	Total	Fuel	Non-Fuel	Total	
1984	8755.2	17954.9	26710.1	7345.1	6570.6	13915.7	12794.4
1985	8537.9	16821.2	25359.1	6176.4	6976.9	13513.3	12205.8
1986	7286.7	14992.3	22209.0	3540.6	10503.6	14044.2	8165.0
1985:							
January	493.6	1056.8	1570.8	484.6	557.8	1042.4	528.4
February	462.7	988.5	1469.8	460.2	525.1	985.3	484.5
March	671.9	1262.1	1956.5	563.7	496.5	1060.2	896.3
April	827.4	1271.7	2124.2	531.9	513.8	1045.7	1078.5
May	860.3	1349.0	2238.6	423.7	576.9	1000.6	1238.0
June	747.4	1421.7	2194.5	482.5	482.1	964.6	1229.9
July	790.6	1370.6	2184.6	396.3	560.7	957.0	1227.6
August	769.8	1379.5	2170.3	509.1	564.2	1073.3	1097.0
September	795.7	1587.7	2403.8	530.8	568.2	1099.0	1304.8
October	676.9	1667.2	2369.6	625.0	631.4	1256.4	1113.2
November	607.2	1664.1	2291.6	584.7	626.9	1213.6	1078.0
December	834.4	1802.3	2664.7	583.9	871.3	1455.2	1209.5
1986:							
January	520.1	1371.2	1909.2	519.4	689.2	1208.6	700.6
February	595.4	1138.6	1751.2	435.4	687.6	1123.0	628.2
March	881.0	1259.8	2157.6	280.3	585.7	1021.1	1136.5
April	820.0	1335.3	2172.0	203.9	676.5	880.4	1291.6
May	821.3	1453.6	2290.8	269.5	681.8	951.3	1339.5
June	607.8	1380.4	2001.0	228.6	700.1	928.7	1072.3
July	689.3	1504.0	2206.9	265.8	933.1	1198.9	1008.0
August	641.3	1445.4	2098.5	237.5	911.5	1149.0	949.5
September	559.1	1280.2	1852.9	254.6	1058.1	1312.7	540.2
October	389.9	939.3	1340.9	265.3	1154.5	1419.5	-78.9
November	424.1	839.4	1273.5	256.8	1051.3	1308.1	-34.6
December	337.1	975.1	1327.9	323.5	1219.1	1542.6	-214.7
1987:							
January	321.6	923.4	1259.0	334.3	986.4	1320.7	-61.7
February	386.2	1053.8	1450.7	336.0	804.9	1140.9	309.8
March	456.2	960.1	1427.8	453.0	685.9	1138.9	288.9
April	596.4	1055.1	1667.9	367.3	812.8	1180.1	487.8
May	778.0	1386.8	2183.9	444.5	743.4	1187.9	996.0
June	985.4	1637.6	2641.4	302.1	907.0	1209.1	1432.3
July	976.2	1897.6	2892.0	334.5	1135.3	1469.8	1422.2
August	871.7	1883.6	2769.7	494.1	825.8	1319.9	1449.8
September	869.7	1848.4	2733.1	471.6	724.3	1195.9	1537.2
October	605.8	1882.8	2505.9	456.7	855.7	1312.2	1193.7
November	532.0	1733.50	2284.7	348.1	897.4	1245.5	1039.2

Sources: Developed from Funex and *Macroeconômica* data

Table 11
Treasury Revenue and Spending

	Index of Real Value of Spending[1]	Index of Real Value of Fiscal Revenue[1]	Index of Real Value of Tax Revenue[1]	Degree of Cover of Treasury Spending[2]
1985				117.0
January	67.6	92.6	92.3	
February	94.3	114.7	107.4	
March	95.8	72.2	97.9	126.8
April	64.3	85.6	85.8	
May	81.2	123.7	101.3	
June	99.6	97.7	110.4	146.5
July	117.7	113.8	98.9	
August	112.6	95.0	117.3	
September	89.6	96.1	95.8	111.5
October	92.0	104.9	96.3	
November	147.3	94.8	104.4	
December	137.9	108.9	92.3	95.7
1986				80.2
January	141.6	141.0	96.2	
February	119.6	125.3	190.7	
March	167.7	97.3	93.2	99.2
April	145.9	95.8	107.7	
May	140.6	103.1	94.5	
June	127.6	114.1	115.6	88.4
July	143.6	115.7	124.0	
August	137.6	101.4	106.8	
September	148.2	119.6	109.9	91.7
October	193.0	155.7	152.7	
November	198.3	134.8	151.1	
December	455.3	147.9	135.2	60.6
1987				
January	120.7	105.3	119.9	
February	111.5	98.1	132.9	
March	72.3	90.5	114.1	112.9
April	170.4	147.0	136.7	
May	130.4	102.9	100.6	
June	163.2	112.0	93.5	91.2
July	139.2	97.0	101.0	
August	112.1	105.0	99.0	
September	144.5	100.0	97.8	89.3
October	152.2	107.9	103.4	

[1] Base Index mid-1985=100. Deflated by IGP-DI (FGV)
[2] (Fiscal Revenue)/(Expenditure) %

Source: Developed from data of the Central Bank of Brazil, FGV and *Macroeconômica.*

Table 12
Real Wage and Real Exchange Rate

	Real Wage, March 1986, Index = 100				Real Exchange Rate Base Index March 1986=100
	Modern Sector[1]	Workers without Contracts[2]	Self Employed[3]	São Paulo Industrial Sector[4]	
1983	102.7	94.3	64.8	77.4	111.3
1984	92.4	80.2	70.1	75.6	108.6
1985	95.3	85.8	76.0	85.7	110.5
1986	114.6	119.5	126.4	104.4	98.7
1985:					
January	87.7	81.2	68.6	78.6	105.2
February	87.5	78.3	67.1	75.8	108.1
March	84.6	78.5	67.6	73.3	105.2
April	84.9	74.0	67.3	77.3	111.4
May	93.8	81.4	70.5	89.4	116.6
June	96.4	86.2	75.4	90.4	118.2
July	94.9	88.1	75.1	92.3	119.7
August	94.6	89.9	78.7	89.6	110.7
September	94.8	86.3	83.9	84.4	111.8
October	95.0	86.4	77.9	91.4	112.3
November	107.7	95.5	89.0	96.9	104.3
December	121.4	104.0	90.7	89.5	106.1
1986:					
January	97.2	99.6	91.5	92.0	99.3
February	96.1	94.8	86.3	92.1	99.2
March	100.0	100.0	100.0	100.0	100.0
April	106.0	107.0	102.1	102.0	100.6
May	109.7	116.6	112.0	103.4	100.9
June	110.3	113.8	120.6	103.0	100.4
July	116.4	120.6	132.1	105.8	99.5
August	118.9	124.3	142.6	107.5	98.1
September	120.5	127.0	139.3	108.8	97.7
October	122.4	128.8	150.5	111.6	97.8
November	127.8	136.8	166.9	114.6	97.1
December	149.8	165.2	173.2	111.6	93.3
1987:					
January	115.6	139.0	150.9	101.1	91.7
February	111.4	137.5	143.9	98.6	96.9
March	106.0	128.0	130.4	106.6	98.4
April	101.5	107.2	110.5	103.1	93.2
May	98.9	101.7	100.2	101.6	93.0
June	93.0	102.1	95.5	101.2	95.5
July	91.4	97.5	96.9	91.9	98.5

[1] Workers with work permits
[2] Workers without work permits
[3] 'Conta propia'
[4] FIESP wages

Sources: Developed from IBGE, *Conjuntura Econômica* and *International Financial Statistics*.

Bibliography

Almeida Reis, J.G (1985), 'Dinâmica dos salariaos nominais: uma análise do setor de construção civil', Master's Thesis, Pontifícia Universidade Católica do Rio de Janeiro.

Arida, P. (1982), 'Reajuste salarial e inflação, pesquisa e Planejamento Econômico', (mimeo), Rio de Janeiro.

Arida. P.and A. Lara Resende (1984), 'Inertial Inflation and Monetary Reform in Brazil', in J.Williamson (ed.), *Inflation and Indexation: Argentina, Brazil and Israel* (Cambridge, Mass.: MIT Press).

Bacha. E. (1983), 'Vicissitudes of Recent Stabilisation Attempts in Brazil and the IMF Alternative', in J.Williamson (ed.), *IMF Conditionality* (Washington DC: Institute for International Economics).

Bodi, P. (1986), 'O plano Cruzado', mimeo, Pontifícia Universidade Católica do Rio de Janeiro.

Bomberger, W.A., and G.E. Makinen (1980), 'Indexation, Inflationary Finance, and Hyperinflation: The 1945-1946 Hungarian Experience', *Journal of Political Economy*, Vol. 88, No.3.

Bresciani-Turroni, C. (1937), *The Economics of Inflation: A Study of Currency Depreciation in Post-War Germany* (London: A.M.Kelley).

Bruno. M (1986), 'Curing Hyperinflation', *Economic Policy*, April.

Bry, G. (1960), *Wages in Germany 1871-1945* (Princeton: Princeton University Press).

Camargo, J., and E. Landau (1983), 'Variações de demanda, estrutura de custos e margem bruta de lucros no Brasil', *Pesquisa e Planejamento Econômico*, December, Rio de Janeiro.

Carneiro, D.D (1986a), 'Long Run Adjustment, Debt Crisis and the Changing Role of Stabilisation Policies in the Brazilian Recent Experience, in R.Thorp and L.Whitehead (eds.), *Debt and Adjustment in Latin America* (Basingstoke: Macmillan Press).

Carneiro, D. D, (1986b), 'Passivo do Governo e déficit público: a experiência da economia brasileira no período 1970-84', Texto para discussão no. 125, Departamento de Economia, PUC/RJ, Rio de Janeiro.

Carneiro, D.D, (1987a), *Stabilisation and Adjustment Policies and Programmes: Brazil* (Helsinki: World Institute for Development Economics Research of the United Nations University).

Carneiro, D.D. (1987b), {The Cruzado Experience: An Untimely Evaluation after 10 Months', Texto para discussão no.152, PUC/RJ, Rio de Janeiro.

Contador, C. (1977), 'Crescimento econômico e o combate a inflação', *Revista Brasileira de Economica*, Vol. 31, No. 1.

Contador, C. (1982), 'Sobre as causas da recente aceleração inflaconaria: comentarios', *Pesquisa e Planejamento Econômico*, August, Rio de Janeiro.

Cukierman,A. (1983), *Relative Price Variability and Inflation: A Survey and Further Results* (New York: Carnegie Rochester Conference Series on Public Policy, No. 19).

Cukierman, A. (1984), *Inflation, Stagflation, Relative Prices and Imperfect Information* (Cambridge: Cambridge University Press).

Dornbusch, R., and M.H.Simonsen (1985), *Inflation, Debt and Indexation* (Cambridge: MIT Press).

Dornbusch, R., and M.H.Simonsen (1987), 'Estabilización de la inflación con el apoyo de una política de ingresos', *El Trimestre Económico*, April-June.

J. M. Fanelli, R. Frenkel, and C. D. Winograd (1987), *Stabilization and Adjustment Policies and Programmes*, Country Study 12 (Helsinki: Wider).

Fisher, S., (1977), 'Wage Indexation and Macroeconomic Stability', *Journal of Monetary Economics* (Supplementary Series).

Franco, G. H. B. (1986a), 'Aspects of the Economics of Hyperinflations: Theoretical Issues and Historical Studies of Four European Hyperinflations of the 1920's', Ph.D. Thesis, Harvard University.

Franco, G. H. B. (1986b), 'O Plano Cruzado: diagnóstico, performance e perspectiva a 15 de novembro', Texto para discussão no.144, PUC/RJ Rio de Janeiro.

Frenkel, R. (1979), 'Decisiones de precios en alta inflación', Estudios Cedes, Vol.2. No.3 (Buenos Aires).

Frenkel, R., and J. M. Fanelli (1987), 'El Plan Austral: un año y medio después', mimeo (Buenos Aires: CEDES).

Frisch. H (1983), *Theories of Inflation* (Cambridge: Cambridge University Press).

Gómez Lorenzo, J. (1987), 'Inflation and Price Stabilisation in Lag-Indexed Economies: The Case of Brazil', mimeo, Linacre College, University of Oxford.

Gordon, R. (1982), 'Price Inertia and Policy Ineffectiveness in the United States, 1890-1980', *Journal of Political Economy*, Vol. 90, No. 6.

Graham, F. (1930), *Exchange, Prices and Production in Hyperinflation Germany, 1920-23* (Princeton: Princeton University Press).

Gray, J. A. (1976), 'Wage Indexation - A Macroeconomic Approach', *Journal of Monetary Economics*, Vol. 2.

Heymann, D. (1986), *Tres ensayos sobre inflación y políticas de estabilización* (Buenos Aires: CEPAL).

Kacef, O. (1986), 'Inflación crónica y variabilidad de precios relativos - Un análisis teórico', Master's Thesis, Pontifícia Universidade Católica do Rio de Janeiro.

Lara Resende, A. (1984), 'A moeda indexada: uma proposta para eleminar a inflação inercial', Texto para discussão, no. 75, Departamento de Economia, PUC/RJ, Rio de Janeiro.

Lara Resende, A., and F. Lopes (1981), 'Sobre as causas da recente aceleração inercial', *Pesquisa e Planejamento Econômico*, December, Rio de Janeiro.

Lara Resende, A., and F. Lopes (1982), 'As causas da recente aceleração inflacionaria: replica a Contador', *Pesquisa e Planejamento Econômico*, August, Rio de Janeiro.

Lemgruber, A. C. (1974), 'Inflação: o modelo de Realimentação e o modelo da aceleração', *Revista Brasileira de Economia*, Vol. 28, No. 3, July-September.

Lima Vianna, R. L. (1988), 'O comporta da demanda de automoveis: um estudo econométrico', Master's Thesis, Pontifícia Universidade Católica do Rio de Janeiro.

Lopes, F. (1982), 'Inflação e nivel de atividade. Un estudo econométrico', *Pesquisa e Planjamento Econômico*, December, Rio de Janeiro.

Lopes, F. (1984a), 'So um choque heterodoxo pode curar a inflação', *Economia em Perspectiva*, August, São Paulo.

Lopes.F. (1984b), 'Sistemas alternativos de indexação salarial: una análise teórica', *Pesquisa e Planejamento Econômico*, April, Rio de Janeiro.

Lopes. F, (1986), 'O choque a brasileira', in F. Lopes, *O choque heterodoxo* (Rio de Janeiro: Editora Campus).

Macedo, R. (1983), 'Wage Indexation and Inflation: The Recent Brazilian Experience', in R. Dornbusch and M.H. Simonsen (eds.), *Inflation, Debt and Indexation* (Cambridge, Mass.: MIT Press).

Modiano, E. (1983), 'A dinâmica de salarios e preços na economia brasileira 1966-81', *Pesquisa e Planejamento Econômico*, April, Rio de Janeiro.

Modiano, E. (1985a), 'Salarios, preços e cambio: os multiplicadores de choque numa economia indexada', *Pesquisa e Planejamento Econômico*, April, Rio de Janeiro

Modiano, E (1985b), 'O choque argentino e o dilema brasileiro', Texto para discussão, no.112, Departmento de Economia, PUC/RJ, Rio de Janeiro.

Modiano, E. (1986a), 'Inflação zero: poucas duvidas, muitas certezas', *Conjuntura Econômica*, April, Rio de Janeiro.

Modiano, E. (1986b), *Da Inflação ao Cruzado* (Rio de Janeiro: Campus).

Modiano, E. (1987), 'Plano Cruzado: a primera tentativa', Texto para discussão, no. 171, Deparmento de Economia, PUC/RJ, Rio de Janeiro.

Modiano, E., and D. D. Carneiro, (1984), 'A mágica do novo cruzeiro e a geração da nova inflação', Texto para discussão, no.78, Departmento de Economia, PUC/RJ, Rio de Janeiro.

Modigliani, F., and T. Padao-Schioppa (1978), *The Management of an Economy with '100% plus' Wage Indexation*, Princeton Essays No.130.

Olivera, J.H.G. (1967), 'Money, Prices and Fiscal Lags', *Banca Nazionale del Lavaro Quarterly Review*, September.

Passos Domingues, L. (1986), 'Política de mercado aberto no Brasil e a experiência de 1984', Economics Masters Thesis, Pontifícia Universidade Católica do Rio de Janeiro.

Rosenwurcel, G. (1986), 'Inflação e estabilização na Argentina. O Plano Austral', in P. Arida (ed.), *Inflação zero* (Rio de Janeiro: Paz e Terra).

Sargent, T. (1982), 'The end of Four Big Inflations', in R. E. Hall (ed.),

Inflation Causes and Effects (Chicago: University of Chicago Press).

Sargent, T. (1986), 'Stopping Moderate Inflations: the Methods of Poincaré and Thatcher', in T. Sargent, *Rational Expectations and Inflation* (New York: Harper and Row).

Tanzi, V (1978), 'Inflation, Real Tax Revenue and the Case for Inflationary Finance: Theory with an Application to Argentina', IMF Staff Papers, Vol. 25, September.

Verdier, T. and C. D.Winograd (1988), 'Chronic Inflation, Coordination and disinflation: The Beauty Contest Phenomena', mimeo, Paris, Ecole Normale Superieure.

Werneck, R. (1986), 'Poupança estatal, dívida externa e crise financeira do setor público', Texto para discussão, no. 121, Departmento de Economia, PUC/RJ, Rio de Janeiro.

Winograd, C. D. (1985a), 'De la hiperinflación alemana al Plan Austral en Argentina', mimeo, August, Ecole Normale Superieure, Paris. Shorter version in *El Cronista Comercial*, 20 September, Buenos Aires.

Winograd, C. D. (1985b), 'Modèle objectif, modèle subjectif, et prophéties autoréalisatrices', mimeo, Ecole Normale Superieur, Paris, August.

Winograd, C. D. (1988), 'Essais sur les politiques de stabilisation macroéconomique, parts I and III', Doctoral Thesis (new regime), Ecoles des Hautes Etudes en Sciences Sociales, Paris.

Winograd, C. D. and Verdier, T. (1989), 'Wage Indexation and Social consensus: The case of Brazil under the Cruzado Plan', Ecole Normale Superieure, Paris, Document no.157.

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